A CALL for the government to mobilise resources un a scale "not seen since the war" to tackle the likely impact on employment of micruprocessors and automation, has been stude

Resources Research III London. In a paper called "The chips will be no ensy "wund-waving solutings" to the increased unemployment that could flow from increased automation.

Agreement

Control Data acquiring one mil-lion of Scan-Data's common

Egorpment VAX 11/780 32 bit minicamputer is expected to bo announced next month by Iranian Prime Minialry. Harris Computer Systems in the form of a machine with a 48-bit nrlthmetic processor. The I/O, niemory access and DMA channels in the existing Horris Slash minis already handle 48 bits, but the processor has a 24-bit word

REB £34m profit

which the NEB has a share-holding of nearly 25%.

Budget Organisation, another division of the Prime Ministry.

ICL's revolutionary system

form the 1900 series, can be adapted to handle efficiently any high level language, and which has a revolutionary design to deal with the "natural structures of information" has been demonstrated for uver four years at ICL's Advanced Research and Advanced Derelopment Centre in Steve-

nage.
This Centre also developed the Distributed Array Processor and Contents Addressable Files Stnre, which have both recently appeared as publicly uvuiluble ICL projects.

in a talk to the ICL Users' Cnnvention of Eastbourne lost week, Gordon Scarrott, head nf tho Stevenage RADC, anid Iknt the new processor system. called the Variable Computer System, offers useful advantages compared to a 1900 ays-

A DISAGREEMENT over payment is to lead to the effective

withdrawal of Scicon from Iran

by the end of July. The company

has been unable to agree on

Coding Organisation of the

Scloon has for the last aix

years been working on the do-

velopment of n sophlaticated system for tha ratrieval of legal

information, sold to be one of the

most advanced in the world. The

aystem is currently being con-pleted under the third phase of

the contract ralating to deve-

A fourth and final 12-

ionmant work.

financial terms for the final

execution speed, low operating system overlieads and reducions in object code size.

Its main feature, however, was that it moves away from traditional Von Neilmann architectures, which have been the base of most machine designs in the past. For example, the VCS pro-

cessor is designed to ensure that it is not possible for one program to corrupt another during multi-programming execution. All access to stored information in the VCS is only made with respect to its explicit structure and means are provided to protect the atructure from accidantal corrup-

Like the Burroughs Bt700 system, the capability is also provided for adapting part of the microprugram to run

Scicon quits Iran

various high level language programs efficiently.

As the VCS provides n revolutionary new view of the processor structure, it is not expected to meet ICL's immediate marketing objective of selling more 2900 systems, unlike the CAFS and DAP projects which are complementary to ICL's exlating

An Impressive demunstra-

tion of CAFS was given at

Eastbourne. Demonstrations

were also given of voice Inter-

action systems which are cur-

rently under development at

According to Scarrott, o

combination of VCS, CAFS

and voice-interaction systems

could provide a computer

which can reapond to ad hoc,

complex human enquirles fast

enough for the user to regard it

similar US companies offering

this type of service but, occor-

ding to Tendell, this gap has

Service centre at Buah House,

London, in the form of a £1.5

members of the Association of

Broadcasting Staffa, who will be

responsible for input on the ays-

system

Stevenage.

DISCUSSIONS are under way which could lead to the Post Office taking a direct role in oversana marketing of the forthcoming System X ullelectronic telephone exchange systems which are under deviopment at GEC. Picssey and

Two other national comsupports both IBM and low-cost penlea, Cnblo & Wireless, uwned by the government, and International Aerudio, controlled by the untlongised Urltish Airways, are also involved in the tniks, and a joint referom dubbed Britel could result.

System X

\$200,000 National Semiconductor will lo selling the system on an OEM lasis rather than to end-users. dustry came last week following thel is one of saveral companies e speech by Ernest linerison. currently discussing the pro-



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MODE PROGRESSIVE

SOFTWARE DOUSES

Mid-range

'370' from

Phillp's Two Pi V32 micro.

National Semiconductor has

officially announced on IBM

370-cumpatible system which

has the power of a 370/145, is the

size of a System 32 and is hullt

around eight of the powerful

2901 four-bit bit slice micro-

System 400 oses the company's own IDM 2001A version of the

Ailvanced Micro Devices 2901

chip, which is claimed to have a

cycle time between 40 and 50%

able 16 Megabytes of main nemory, and is claimed to offer

tionighput approaching that of

The machine has the full 370

Instruction set and National

Sendconductor is offering it

with two IBM operating sys-

tems: DOS/VS and VM/370.

minicompater has structure

second 32 bit 2001 A processor

Mialmoo ardii menury is 256K

The System 400 has n

faster than other vecsions. The System 400 has a tornul-

The National Semiconductor

processor eldps.

NatSemi

PEC Contracus formell to

Briefing

ICL expands S-range

A NEW entry in the ICL 2900 range, code-nomed S2 and believed to be a small 2940 model. has been revealed by ICL to some potential users. Other 2900 "S range" systems are likely to include improved versions of other 2900 models, the largest being tha 2986.

One feature of the S systems, first introduced with the 2950, is more efficient I/O, communicationa and memory access structures. For larger systems, such as nn improved 2970 model, proceasor power is booated by Improved Instruction interleaving techniques.

Second revolution

THE Department of Industry accepts that information technology could lead to a "secnnd ndustrial revolution" and belleves that the existing government agencies working on the problem will eventually be uble to come up with a solution. That was one of major policy view-points expressed by leading Dol civil servant Martin Lom Insi week. For more, see page 5.

ब्ह्नुसू02 visitors

COMPEC Europe clused its donrs inst Thursday on over 80 satisfied stand-holders who welcomed 5,602 visitors. Next year's exhibition from May 8-10 promises to be biggor and better than ever. Meanwhile, the UK show, Compec 78, which this year takes place at Olympia, is neorly sold out.

E Series forecasts

SOME US IBM watchers hava been predicting that launch of the E-acries will be put off until spring 1979, but the leaks in Japan have led to revised forecasts that at least two of the predicted six modela will appear ater this year. Tha top machine is expected to offer twice the power of the 148, and the range is thought to be microprocessor based, as are Two Pi's V32 and National Semiconductor's Sya tem 400, both of which are 370, compatible (CW, Mey 5).

Centre-file changes

TOP management changes are expected to be announced by the. entre-file bureau by the end of entre-file bureau by the end of this usek, although no details were available at the time of going to press Centre-file is a subsidiary of the National Wasiminator Bank and specialises in accounting services for stockbrokers and building sociaties. sociaties.

Faster model

A NEW top-of-tha-line 80-series model has been announced by Univac in the US. A cacha memory has been added which than the 90/80 3, and maximum main the 40/50.3, and maximum that he memory is doubled to 8 Megabyte 90/- 80-4 costs \$1.3 million, compared to \$1 million for a 2 Megabyte 90/80-3/

atracture of problems.

Ha described langueges such es Cobel and Fortran as "ebaminations without which we cannot live" and said that loaping program structures wars a "bas-tardized invantian by Mephis-

In the future, he believed, nav perellal and array processing computer erabitectures will be developed to holp men to manage complex social problems. The craft of programming, ha

The craft of programming, ha ballaves, will turn into a question of orchitectured enelysis, building a structured design from hardware modules to match the structure of the problem.

The "analytical architect" of the future will resemble an elections the structure of the problem.

trical engineer, he said, aon-astrod primarily with selecting the connectivity requirements for a system from a catelogue a firmware components. By the beginning of the next century, he believed, it was likely

that there would be few jobs for the programming function as it is currently understood.

• See Computaryiaw, page 2.

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Nato to call for

tem, NiCS, which handles voice

network bids

Price 18p

to East London on Saturday when The Byte Shop at liford opened for business. The shop attracted a steady stream of "micro buffa" throughout the day eager to see some of the hardware about which they had only been able

Sales on the first day were mainly of the wide range of books handled by LP Enterprises, the importing company run by Vince Colten, a partner in the store. The shop will be selling the Newbear Computing Store 77-68 ayatem and Bearbag range of packaged board kits. A Commodore Pet is also to be added to the Inventory. • Vince Cahen is pictured ringing up one of the live Cohen and his partner, Bill Cannings, plan to seles at the Gyle Shap.

sidering franchising additional shops around the country. One planned for Birmingham could be open in a few months. In addition to hardware, the Byte Shop offer

two software packages written by Software Works Inc of America. These are Mallroom, a Interactive mailing list package coping with up to 1,000 names and addresses, and inventor i.e. an inventory control system for up to 94 items. Both are written in Basic and are in tended to run on the 8080/Z80 based system using the North Star mintfloppy disc system.

Programmers are

mers are "amhteurs" using "bas-terdised inventions by Mephistophales," such as programming loaps. Out the "craft of programming" will be radically altered by the end of the cantury, making software programmers as we

software programmers as we know them today redundant.
That is a view aspressed by computer pionaer Br Carl Hammer in an interview with Camputer Weakly editor Malcalm Pettu in which Dr Hammer locked at the nature and impact of com-

challenges facing DP menegers was meneging DP staff who, by and large, had "fargotten athical

ganiuses who aan ignore ordinary work rules such as time kaaping," he said. It was wrong, he believed, for anyone to have the title earlier

nelyet unless they hed many years — passibly dacedes — of insight and experience.

Dr Hammer's general thesis was that computer architectures.

Thursday, May 18, 1978

MAJOR software companies to Eurnpe and the US are preparing to bld for some of the biggest software contracts ever ploced The customer will be Nato and the main contract will invoive a nctwork of command and controi systems cavering European

member countries and linking them with the US.

A cail for blds is expected to be made soon for a study contract which alone should be worth

obout \$8 millinn. The study will involve specifying the architec-ture of the command and controi natwnrk. Nato is understood to be considering using X25 ns the proto-col firr linking the systems in the network, a move which would

greatly increase the pressure on manufacturers to provide full support for the protocol. The network will probably

tructs include Logica, Scicon and data communications between all the member countries and Leasco Software. Computer Sciencea is also

in addition to the command and control system, controcts are also to be pinced soon for two mesage switching systems, understood to be code named although the firm is only pro pared to say that it is interested in n number of Nato projects without being specific. it is Scars and Comp, nithough nu aiming to capitalise on its ex detnils are available yet. UK companies known to be Turn to page 16

New challenge to IBM

LOW-COST altornatives to the IBM 370/138, 148 and the 3031

of firmware, most of it unused at present, which should emple the muchines to malutain compatibility with future firmware operating system developments which IBM may introduce. Megnuson 'ohsolescent-pruof strutegic

'Chocs' away with men's awards at Computastars first heat

intosh dominated the men's events in the North East heats of omputastars, held at the Nab. Wood Sports Centre in Bingley, Yorks: last Weekand. They omped away with the team title by acoring 152 points overall with closest rivais, Plett Soco Lowall, the textile machinery - manufacturers, second with 133

eppeared almost es fit as at the start of the competition.

start of the competition.

Rigby, who playa rugby union for York; said: "I didn't find it partiaularly difficult because the rugby season has just finished and I m pretty inst.

The ladles' team title was taken by the girls from Woolworth. Rochdale, They were comfortable winners with 176 points, while Midland Benk, Sheffield, were runners up, 167 points.

petition featured a see-saw

Computaatars la a netionwida competition for DP parsonne organised by John Goldamith Shelle Watson (Midlend Bank)

recing, for example:

really. Funnily enough, I did tre, Briatol, This will be followed better in the things I didn't ex-pect to be doing — in the seck recing, for example:

by heats in South and North London, Liverpool and Birmingham.

THE squeeze is still on, but there is planty to interest everybody in this compact Computer Weekly. At Eurocomp there was talk of revolution and the trail that micros are blazing that the 21 at Cas tary (Page 11). From Brussels, Tim Palmer reports on Compac Europe, the specialist show which is putting in more exhibitors and more yieltors each year [Page 15]. And all the regular features comingle to give full caverage to the scene. Boftware File reports on Butrougher efforts to soothe users of the scrapped MCP VI (page 7); Op Spot deals with the need for good documents ion (Page 13]; and Micro Rews looks at IT's move into personal computers (Page 14). Carry Fisher hits our at the government's policy for obmputers (Page 14), carry puters in school administration (Page 10), There is also Glib's firstingloingy (Page 6), Pegipis (Page 10), Downtine (Page 10), and Letters (Page 12). The new adventures of the Hex Kid figure betty delayed because of the space problem but his is due back next seek

Distributed Computing Centralised Intelligence

Distributed ayslems are no longer a concept for lomorrow. For saverel of Data Logic's cliants they ere fost bacoming a reality. For one teading company we are implementing a network of over twenty minicomputers. For enother, a system with ten processors. A third will have four interconnected minis each supporting twelve or more remote

Each of these solutions was tellormed to meet a specific need. Processor power, local atorage, communications links and central facilities were all designed with care for optimum usability at minimum cost.

The clients aupptied the crucial knowledge of their business environments. Data Logic aupplied the technical skills. Joinly, we provided the ingradient that creative system.

solutions read intalligance.

(RMCS CORAL 66)

PDP-11s (LSI-11) - under RSX-11M, R\$X-11D RT-11, IAS, DOS - with FLOPPY or **DISC SYSTEMS**

cleims for our CORAL 66 package have overcome their We welcome competition and criticism. The user will

decide on the good points - we are heppy to try to elintinete any initelions. If the RSRE run-time benchmerks are anything to go by, the HPA CORAL 66 compiler on a PDP-11/70 with cache memory (980ns) under RSX-11M (Varsion 3) has produced aggregate timings of 48,38 seconds. Of course,

A competible compilar is aveilable on Computer Automotion's LSI-2 and another soon to be released for the NM4 aeries — cross-compilers also avallable

HUGH PUSHMAN ASSOCIATES (COMPILERS) LTD

Chris Tendeil, managing director of Scicon (iran) cited Prime Ministry, Scicon has done developments in Iran, auch as work for the Ministry of Energy the very high rate of Inflation and the Ministry of Education in and the emergence of local Iran, employing at the peak firms, staffed by Iraulan natiophase, of its work for the Law nais, as major factors leading to are 14 Scicon stuff still there. significant price advantage over

The company continued to anjoy a very good relationable with the commissioning client, he sald. However, the PBO had formed its own ideas on chargea.

Computastars

FOR computer paople in the North, next Sunday, May 14, is an important sports date. That's the dny when the first regional heat of the natianwide Camputaciars aampetition takes place at the Nab Wood Sparte Centre, Bingley, Yorks. There will be 28 teems taking part, 20 of men end eight of wamen, and

Users favour

network if it existed:

Management Services.

tem, although the amount has not been agreed. But it has disa-

public networks

BBC staff first heat delay £1.5m

tian is expeated to be

Computations le being pro moted by John Goldemith (Computer Sarviaes) in can-junction with Computer million computer-based infor-metion distribution system, has unction with Computer Weekly, and the arganisation of been delayed by newsroom and clerical staff demands for an the northern heat has been extrs "technology allowance".

The BBC has agreed to pay extra to the clerical staff, handled by a group from the Hallfox bureau, Provident

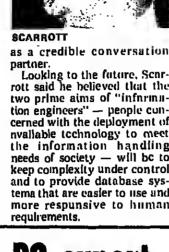
puter Networks.

A CLEAR response in favour of represented by the National public switched data networks is Union of Journalists, which savie

puter Networks, tion System will provide news Seventy-five per cant of the staff with instant access to news

sample of 480 computer network stories via VDUs. They will be users said they would use auch a sale to read the stories on the screen or get a herd-copy.

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PO export role with

UK firms at one tima offered a

which makes it casy to recon-figure and expand the system. A

minicumputer peripherals. bytes und the US price for system with CPD, two input-output processors, service processor and console, 200 Megabytes on munications export company disc and a time unit is \$165,000 to Renewed pressure for a ratio-nalisotion of the UK electronics and telecommunication la-INTRODUCTION of new technology into the BBC's World

The State of the same KAIK **HYTERM** HIGH QUALITY PRINTING TERMINAL RAIR * 45 C.P.S. printing et 1200 band * Buffar overflow protection * Switchabla IBM 2741/Teletype compatibility.

demand in treat Billiam by 13.8 Limpted Shierpen Plane, the head of CONTROL and published by 170° Elighted Electricism Fresh and District House Standard Steet, and any 35° M C

'amateurs' using the **Devil's inventions** THE majority of today's program-

Number 601

puting in the future (see page 4). He sold that one of the greetest

work habits."
"Nine out of ten programm today ere 'ameteure,' many of whom see thamselves as

who finished the stronger, even. Computer Services and suptually winning by 64 points to 55. ported by Computer Weakly.

Shella, extremely modest in. The next Computasters heat victory, said: "I think it was a takes place this Sunday, May 21,

. points. Martin Rigby, a aystem de-aigner with Rowntree Mocklotosh, took the men's individua title. After spending most of the day performing presacipa, stand-ups, drop-kicking goals and "wellie boot!" alinging, he

The ladies' individual com-

A TEAM from Rowntree Mack- bettle batween Kethryn Cochrane (Woolworth) and

metter of luck and nerves, at the Whitchurch Sports Cen-

INSIDE THIS WEEK

IRISH JOBS PAGES 17-18 APPOINTMENTS 17-47

了。 在一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就是一个人,我们就

have been announced in the US this week by Magnuson Systoms, the latest clutllenger to IBM with "look-olike" processors (CW, November 10, 1977). The Mognuson machines are said to be two to throo times less axpensive than their IBM equiarchitecture.

The cumpany plans to leunch

maka use of the exlating Nato Celled the M80 Series, the the systems in Europo soon.

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NEWS IN BRIEF

'The chips are down'

by Colln Hines of Earth are down," Himes says that there

THE marketing of Control Data optical character reading systems is likely to be token over soon by OCR apecialists, Scan-Data, following the announcement of a preliminary agreement hetween the two firms.

This is also likely to load to Control Data securities and to Control D

Rival from Harris A COMPETITOR for the Digital

A PROFIT of £34 milliun before month contract had been plantax and extraordinary items was ned to provide for post-Board in its 1977 financial year. A profit contribution of £7.21

made by the National Enterprise implementation support. However, proposed Scicon charges for this work have proved unacnuliion was made by ICL. in ceptable to the Planning and

HPA CORAL 66

We hope our potential customers who were scentical of our

users tun their own benchmarks - there is far more to our compilers than mere speed and reel-time programming.

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handling

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Brussels

Mandate

to meet

in London

TilE inhibiting effect of tele

communications legislation

on the growth of international

networks wilt be one of the mair

talking points at the first

meeting of the Brussels Mandate

So called because the concept

was formulated after the Online

conference on transnationa

year, the Brussels Mandate la

the Nixon/Ford Administrotion

Eger said that he saw tho

Brussels Mandate as a world

concerned essentially with free

dom of communications and the laws that discouraged thia.

Eger told Computer Weekly that he hoped the London

meeting would attract represen-

tatives from government, the

academic world and from

telecomms users in roughly

equal numbers. Big Internation

il network users like the Chase

Manhattan Bank and American

Express had already decided to

It is to be used to assist in dis-

seminoting information and

naterials developed during the

five-year National Development

Programme which ended last

He has also questioned a claim

by Mrs Williams, in the final

une of the world leaders in com-

in Washington.

in London on June 15 and 16.

Like all generalisations, the validity of Dr Hammer's statement must he judged at its macro philosophical level rather than by bit picking at the details. In saying that nine out of ten

programmmers are amaleurs. Dr Hammer was not offering a researched statistical figure or suggesting that the DP professinn is filled with people who are consciously being charlatans or

But he was pointing out that the rapid growth of computing usage hos creoted a huge demand for staff to perform what at first sight seem to be demanding, intellectually complex

Although this is true for a

COMPUTER

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published to dines a year, has a nire iton of over \$4,000.

West Coast.

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A STATE OF THE PARTY OF THE PAR

Programmers and analysts Hammered

to the people who bear the brunt implementation functions, it is not really true for the bulk of the of systems implementation, the operations staff. work carried out by today's DP

This is reflected in the ridiculous state of affairs where Often the work is mure analooperations staff, who con make gous to traditional routine clerior break the effective running of cal functions than to the popular a system, are generally paid less image of the mathematical than programming staff, who genius grappling with intricate often have very little undermatters of systems and prostanding about the importance of the end product to the user. The way in which computers

gramming logic design. Within the computer "profession," particularly in the UK have become an Intrinsic part of with its continuing class and the fabric of society, compled educational divisions, there is with the general failure of softeven a feeling that software ware people to design and imppeople are in some way superior lement relibie, useable systems

that at a time of general unemployment, there is an insatiable demand for programmers and analysts to sort out past bugs and develop new systems. In many organisations, young

to tight deadlines, has mean

prugrammers doing relatively undemsading tasks are heling pnid as much or more than men and women with a lifetime's experience. Even if a computer system might sometimes X25 had been badly designed threaten other people's employ-ment, DP staff can sleep comfirtably, secure in the knowledge that there will be acres of ob vacancies in the computer Press cach weck.

of systems and a responsible

concern for the impact the tech-

He went on to say that X21 hnd been aonounced as the unlversal synchronous data inter-Dr Hammer's words should be face for Public Data Networks. a sharp reminder, particularly to but it hnd not enabled a network analysts and programmers, that to be built. their highly privileged position in society should result in a professional attitude to the creation

ınltatluns.

Similarly X25 was defined for switched virtual circuits carrying packets. But it needed an estimated 4,000 lostructions to implement and required the addition of a further interface, the packet assembler disossembler. to handle osyochronous ter-

ditlunal overhead and some

As so far defined, PAD only worked with 1A5 code, nt 110 or 300 bps, and this was in conflict with CCITT recommendation

Pouzin foresees that still further interfaces will be needed to handle demond for accessing simpler terminals, equipment only connected to exchange lines, and more sophisticuted devices incorporating page cuntrol, password control, code translotion and message hand-

Mixdorf names new managers

ound by Nixdorl UK for its general earvice manager, David Atwait; and eoftware manager, Jill Hiscock, who left the con-

pany e fow weake ago. But Nixdorf has not yet fourk financial controller to rapiace ard in Germany. Teking over as softwere

manager at Niedorf Is Dave Heriend, who was formarly training manager; while the man in charge of general service now is Uif Seller, who earlier shared this job with David Atwell.

MEETINGS are being arranged in several cities during May and June for users of online information aystema interested in orming a UK user group.

All is revealed at hush-hush traffic centre

By Chris Youett

at first

SHHH . . . there's n "hush hush" computer centre being built somewhere in the Mildinds that will control tmiffs, eignais on Britain's 2,000 miles of motorway.

Any budding Jamas 20nd can find its io public racorde of Warwickshire County Council, which gave the building planning permission.

But reporte last week indicated that a security

clampdown on its location had been ordered by government officiate because of fears of vandalism and possible terrorist It is understood that a lot of money is being spent on

ecurity devices. When this was put to the Department of the Environment

n London, a spokesman said. "Dh, really, I wasn't awnre of

tuilding work started quietly in Coleshill Heath Road, whole network; and the site, by the side of the MS motor Coleshill, neor Birmingham, last year, and the £150,000 aheli is neorly complete.
It is understood that inside the shell is another building ood that inside the shell is enother building —

It should be operational ofter 1980 and police will input Originally, it was to have been one of a number of

way, was picked "bacquae it was more convenient," eair

the brainchild of America weather and orash data. The computer will eutomotically flash up a series of warning signs along the offected stretch lawyer John Eger, who worked for the AT&T telecommunications giant for 15 years before becoming telecomins adviser to

Two-month countdown for Fortran 77 standard

Standards Institute, having finished work in April on the new Fortran standard, popularly known as Fortran 77, will be making ovailable copies of the standard in about two months, following the final editing of the text. The technical specification is

likely to be similar to that proposed by ANSI's X3J3 committee last June, including amendments made in October. Both these documents have olready been published

Although the formol dasigna-tion of the standard will be X3.9-1978, ANSI bas apparently agreed to accept continued use of the informal title Fortran 77 which onse because so much of the work was done last year.

As with the 1066 standard ANSI has defined twn levels of the language: Fartran, replacing

Implicit OPEN will be generated language and tightens up the on the first reference if the definition of existing facilities. One of the must significant stotement is omitted. Thus

sumething that is already on the dufining exactly what funcmarket," said Bonth, "but If we tions truvel agents will require can't, we will have them custom for day-to-day nperations. made. They will greatly raduce the paperwork involved in travel

"If all goes well devalopment work will be completed in 18 months and wo will be marketing the system," added

and ENDIF statements, pro-

A large part of the extension

has concentrated on enhancing

whereus for sequential files an

the I/O facilities of Fortran. Th

structuring tool.

sequentlal files.

Other extensions include

for Hollerith string constants, the new feature supports chafacilities for list directed I/O, similar to those in Basic, ood rncter variables, arrays, and modifications in the processing Another new feature is the nf arrays and the DO loop. inclusion of IF, ELSE IF, ELSE,

and ENDIF statements, providing an important program

Tory MP probes state of computer assisted learning

language now includes OPEN, CLOSE, and INQUIRE state-CROYDON Central Tory MP. John Moore, is investigating the mants for file processing, aup-porling both direct access and current state of examinotion and experiment in the us computerised teaching Direct access files will require machines in schouls. an explicit OPEN statement

Dissatisfied with the governmoni's unswers to questions he tabled in the Commons, he has report on that programme, that the UK had established itself as now but down a further series tu Mrs Shirloy Williams, Secretary

of Stule for Education. He wants to know what funds ore involved in the Schunis Council project for the development of teaching materials used in computar experiments, and in

how many achools these are being nursuo Moore had been told that the Cnuncil for Educational Technology was being allocated additional funda to promote computer-assisted learning.

putor ossisted fearning. He wants her to hack this cinim up by indicoting the numbers of computers in place in the UK as opposed to the US and Scandinavin in the educationni sysiem.

flo also wants to know white ore the total funds allocated so far to asaist in disseminating infurmation ond materials developed during the progromme.

Moves to link up travel agents

opefully be the advantage of

As ABTA has about 2,000

potential clients among its

membarship, for the yet unde-

aigned and unnamed package,

the davelopment could be worth

Office's Prestel service."

between £7-£8 million.

agents' work, and there will being obla to use the Post

"We have completed a survay togather with British Alrways results are encouraging."

Not all airlina reservation systems are compatible, so ABTA foreaces travel agants uaing the Travicom multi-access system run by Travel Automation Services in London, which already acta as a communica-tions interface between airlines

and UK travel agents. Work is being undertaken on the problems of designing the software necessary to tie all the

TO rationalise part of its operatinns Ferranti has recon-Microprocessing Marketing, is rosponsible for sales of the F100-L and can be contacted at Bracknell on 0344 3232. Tha

paper tried and tested at ... maximum throughput on a cross-section of popular printout units including the ICL 1933, 2903 and 2403 machines and the IBM

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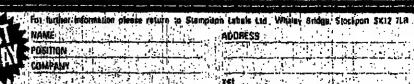
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Focus

DPM is not noted as being one of relaxation — or joy, Many con-sider that they psck more life into one doy thon most other working members of commerce and industry, so it is hardly surprising that the DPM's own aducation and training come low down on his work rota.

No sooner has the dedicated DPM dusted of f his management training course schedules when duty calls: The dats prep supervisor is uptight about her machinea baing used by the night shift oparatora, Faulty batches should stsy that way until normal services are reaumed the next day.
Shipbuilding unions could wail pick up a faw demarcation tips

from DP installations. The next crisis is from the control saction. The latest delivery of invoice statements has been printed minus the company name and address. Frash suppliea will take at least nine weeks. While organising a supply of sticky labels (plus computar run-time), the DPM may

ruefully reflect that lifs as a deep-sea diver would have less ups and downs -- especially the The lunch interrupt comas from tha systems manager. His estimate of a three months' implamentation for that urgent. warehousing application has

gone offina. Unless additional resources are made available.

Managing the **DP** manager

three months. A misunder, lation front lesves little scope or standing of user requirements is energy for the DPM to sit back

It is all too easy for the DPM's own career to get blown off course by everyday installation happenings. For example, the current office status symbol is to have an individual delivery of print-outs. Data flows in auch circumstances in all directions. But should one such report go must keep informed on the astray, the company's affairs

could grind to a half. Seldom, it seems, does anyone query the necessity for all this Information flow. Certainly not the DP team who sre themselves puter has arrived in the Stotes. accustomed to being buried deep In paper. Supervising the daily paper chase could be almost a full-time job in itself.

game. But most DP managers would welcome a spot of information themselves. Are tha dally

Management Information may well be the name of the

reports too much, too late or just redundant? Are there grounds for dumping earlier in the production cycle?

completion of the project will

years

COMPUTER WEEKLY MAY 16. 1968

PLANS by Russia to go for till a competibility his ICT's charless of winding orders in the potentially yest Savier market. Now ever, the move appeared to offer Regish Epotric move scope for its System 4 membines. To enhance somputer power available for resecutive walled for resecutive and the OPO planned to retre a Surrough's BESOL. Private programmiling schools well entitled in the Commons by an MP sylic sells that the commons by an AP sylic sells that the commons by an artificial selling ware using a selling ware using a selling ware using a somputer better form RGA to tempt reading, spelling and matter to unitaries from all topy the desire form by those signomories being done by those vices industries done by those was industries and on later density that was and on later density the plant was and writing.

It could well be the DPM who laads the charge . . .

INTERRUPT

ONCE upon a time there was a manufacturer of shoes who had a computer davoted antirely to payroll and production control/ planning. They were proud of this production control/ planning system. The mechine loading schedules worked a treat, and they knew down to: the last penny axactly what each pair of shoes cost to make.

Sales were sluggish, but they had just filled their new third warehouse with stock. They were proud too di this warehouse - It was the latest in warshouse—It was the latest in mechanical handling and storage. Then they went bust—they were 200% overstocked. The moral: Don't put the cart before the horse; put finished goods stock on before production control/planning.

Submitted by David H. Davies of Elistot, who wine this week's Estimating prize.

THE Planning of Telecommunications in the United Ringdom, by Francis Cipps and Writer Godley is published by the University of Cambridge Department of Applied Economics. The Topage publication is aveilable from the Department Sidgwick Avenue, Cambridge OE3

have to be shelved for a further All this activity on the instaland take stock. Any sitting back has to be limited to the local tavern on the woy home. Toking

visit to the back up site.

In between managing the in

computer plich with the cn-thusiasm of a Cheiseo supporter

Already the super-super cum-

rechnology monitoring in itself

It is time that the DPM drup-

here sre better opportunities

ped his machina supervisor role

ond prospects outside the in-

stallation door. Meanwhile,

Delphic Poils are forecasting an

uprising of onti-computer Lud-

is s full-tims lob.

atock is more likely to be a rush REPLACEMENTS heve been stallstion and, when time permits, his own affairs, the DPM computer market ploca. Mini/ micro systems are invoding tho

Owen Cookson who, with managing director, Mike Burdon, left last month. According to the new managing director, Bert Holler, they left by mutual agreement with the Nixdorf

Online user group

we want, including facilities for preparing food and refresh; ments during evening and night Check mate A MORE powerful version Chess Chullenger, the computerised chessboard, has been



Sporting Life shies n character dats type. As well as replacing the existing provision Fortran, replacing X3.10-1066

regional computer centres with the capacity to control the

A number of subset

implementations have already

the standard being adopted.

These include compilers from CDC, ICL, Intel and Woterloo

be the first from any minicom-

puter or inicrocomputer vendor

executes on Intel 8080 and 8085

inicroprocessors as well as on

tha company's Intellec Series 11/220 and 11/230 CPUs. Con-

fusingly called Fortran 80, the compiler is said to meet and ex-ceed the ANSI 77 subset

Fortrun 77 both Introduces a

number of new features to the

Intel's implementation, said to

been produced in anticipation o

rather like a Chinese puzzia.

(Basic Fortran).

University.

specification.

A LACK of adequate training for operators and the complex noture of the newspaper, rother than faults in the computer system, have been blamed for the recent problems encountered by Sporting Life, following its move

over to computer phototypesetting print technology. Due to this, Sporting Life, which is one of Mirror Group Newspapers, lost six Issues last week and had to return to hot metal production at the begin-

ning of this week to resuma nublication. The empnter bardware involved is based nn Prime 100 minicomputera finked to Linotype Paul photntypesetting

equipment.
"The complex nature of Sporting Ufe, which has o lot of do-tailed editorial information like rnce programmes, was an Important reason for the problems," said a spokesman for the National Graphical Association, which has the majnrity of computer photosetting operotors among its membars of MGN. "It is reolly o question of further personnal training, which I bolieve is being under-

This is supported by the fact that Reveille, a less complicated tabloid newspapër which was the first MGN publication to go over to the new technology, is now operating normally. Sporting Life, however, is a broadsheet, and has a higher density of editorial material.

It is believed that Sporting Life will now ba tha last MGN paper to go over to the new

A MICRO-BASED system that will glyc travel ngents access not only to different nirilnos' reservation systems, but ylawduta type services as well, is being developed by the Association n British Travel Agants.

on the feasibility of such in-house systems," said Ron Booth, chalrman of ABTA's technology committee, "ond the Although still at the dasign

stage, Booth said that the sys-tem would be sufficiently lowcost, between £3,500 and £4,000, technology; instead of the for most travel agents to afford aacond, and its place will ba . It. Talks with manufacturers taken by the Sunday People. would probably take place soon. Sunday Mirror of Daily Mirror. "We hope to be able to get

them to emulate a communica-

tions minicomputer in the UDS

2000 data entry system; Telefil

emulations; and interdate uses them in the 5/16 minicomputer.

Beehive launches mini

slich microprocessor-based processora use the bit-silce minicomputer market is US terminals specially Beehlve. Tha product, expected to be called the B800 if Burroughs does not invervena on behalf of its own Bg00 linea. Is to make its European debut at Sicob where approach, all of them using the 4-bit AMD 2901 chip or derivatives from other semicondu for manufacturers. European minimakers Norsk and Dietz both use the chips in low-cost versions of their It will be shown by French dis-tributor Tracor. The machine standard mini lines; National Semiconductor and North American Philips' subaldiary Two-Pl both have IBM 370 emulations; Modeomp of Florida uses the chips in its new Classic emulsites the Data General Nova instruction set.

COMPUTASITS MICRO MAGAZINE

85p for Computer stores or direct from Computables, 41 Vicenia Street, Yeavill, Somersel.

Ferranti companies

stituted the activities of son of its divisions into three wholly-owned limited companies (CW; May 11). Ferranti Computer Systems Ltd, under managing director Peter Dorey, takes in all the operations of the Digital Systems, Military Systems and Wythenshawe Divi-7860 variable word length minicomputer: Uhivoc usos sions. A unit of this company is using 2901 chips in its Sigma 9. GB 400 and Lockheed Mac other two companies are Fer-rand Electronics and Ferrand

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French attack on telecoms authorities A MAJOR attack has been minde on telecroammnications authoria

by Louis Pouzin, research director of the Institut de Rechen Informatique et d'Antomatique, neur Paris. Speaking at Eurocomp 78 last week, Pouzin said that PB had consistently ignored the findings of research actwork and the standards produced by

International Standards Organ-IBM on He sald that PTT packet networks lacked any system mehitecture and just plied up interfaces une on top of another. The CCITT interfaces such as debate nod could be used only with ad-

FHE munaging director of M tik, Eddu Nixon, has added is voice to these calling for a pulk debate on the effect of com puters on liberty and employment. In a talk to the CSA m The sucial impact of conputing," Nixon said that By would be ready to help in it investigation of these welgid:

issues. hitherto hus been leigeli emotional, Nixon emphasiss that the relationship perceive. hetween technology and unes ployment was only partly dues the technology itself, it sle stemmed from fuilure la me keling. In that new trade poduced new jobs, and from the restructuring of society from being industrial to being hast on services.

"It is not proven that techno logy loses jobs," he said. "h creates jobs as well as it stroying them."

There was increasing public, concern, he added, that society, Would reach 1984 before line and the issues must be dealt with unemotionally, in public. · More on the impact of com

poters, pages 8, 11 and 48. Operators' disputs

settled A DISPUTE over payearth ditions involving 40 operators employed by Hritish Aemspace was resolved last week. One of the operators sald, "We are now. happy we will get the condition

ntroduced by Spectrum Mir. keling. Known as the master versinn, it offers three levels of pluy: for beginners, average and better ployers, and, in additor. allows the player to select offence or defence - while it black pieces.

LIGHT

RELIEF

Devetees of BBC2'n Cnil my Bluft

known wit and reconteur. He was called in to make an etter-dinner

speech at the National Detapolat Users' Centerence at the Metro-

pele Hotel, Aliminghem, end pro-vided in welcome relief from the

world of computing — according to the man he is pointing et. This

is Alan Wetsen, secretary of the Ontopeint Users' Association and marketing services maneger of

Oceanic Rentals Rentals Oceanic Rentals

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acch month," he said criaply. "It would hardly be possible to find human resources to sign that for short term rental many obeques in the right timescale, let alone do all the domplex calculations behind inclusive of maintenance. For details please write or phone 01-283 3667

Oceanic Rentals Lig 16 Bevil London E. /Li LINE ES MALCOLM PELTU INTERVIEWS DR CARL HAMMER, WHO EXPLAINS...

Oceanic Why man needs Rentals Computers to Rentals

unlikely to mstch reality, given

the large number of unpredict-sble variables to be considered?

and uncluttered world. When

there were anly s few hundred

csrs, the csr wss not s msjar

problem; today there sre 200

millian cars in America sione.

When there was a little pallution

of the environment, pollution

was not a major problem; now

we sre polluting rivers and the

stmosphare with tens af millians

af tons of wsste, so care for aur

ecolagical system is a major issue," he answered.

"We are deeling all the time in

glgantics ... data being cellscted by US gevernment agencies at the reta of one milition bytes par yes: per persan."

"Anyone who argues that

chsos is Issa desirabla than non-

"We na longer live in a stable

WITHOUT computers, civilisarent computer srchitectures will be unsble to cape with future lemnnds. New srchitectures will which ore compatible with the real structure of problems. Yat at present there is still insufficient understanding of the nature of problems, particularly in our incrensingly complex societies, but this should not prevent systems designars from noving into the most promising architectural areas, such as

That is the vision of computer ploneer and director af com-puter science st Univec, Dr Carl

Last waek he turned 64, trailing behind himself, he sald, '64 million bytes of dats, liks the nead of s comet trelling infor-

Statistics such as this litter Dr Hammar's conversations with tha dallberata, preconceived randomness of e minefield.

For it is Dr Hammar's conten-tion that the reason why human problems in the future can only be solved with the help of comouters is that the scale of all 'societal problems," es he calls them, have now reached unpre-cedented levels of complexity.

Only computers, he believes, can manege the vest amounts of lata that are now needed to run

"Wa are dealing all the time in gigantics," he said, before reeling off gigentic numbers like data being collected by govern-ment agencies in the US at the rate of 1 million bytes per year per person, with information growing at the rale of 1 million bits per second, chips with I million bytes of memories, and 100 logic gates within 10 years, etcetera, to the nth degree.

One of his most startling and significent figures, however, is that he estimates that all the computers used in American federal and Stata agencies sre currently doing the work of 400 billion clerks.

"That is why I believe modern sociaty just could not cope, without computers," he

computer architectures must be adspled to relate more closely to the structure of problems, although he warned that it "Did you know that each year n America 200,000 new isws sra passed by the State end federal governments?" ha asked rhatorically. "In order to try to ensure observance of these laws." might take 20 years before there was sufficient analysis and understanding of problem. OCEANIC be able to meet the syst-growles and alteria-

A computer system in Bal-

lmore in America produces 35

million social security cheques

"To date," he said, "the struc-tur, of markings has not been problems. We have been trying to squeeze problems into an illfitting shoe."

Most problems, he said, are He then exploded another statistic to emphasise his point:

multi-dimensional, raquiring some form of parallel proces-

lions, the payroll. At present, he nons the payroll. At pleasing the pointed out, payrolls are gro-cessed sequentially, with one at reem of lhatructions on the

timescate, let, alone do all the domplex calculations behind payee at a time; controlled by contention that there in the loog.

All this barrage of statistical invention by Mephistopheles and underliable force to De hamilton that there is an invention that there is an invention that there is an invention that there will nevitably the sign linear contention that there he and, would be a stream actine cure, he said, would be contented in the loog.

The future — forward to have multiple pro
The future — forward to help numanity manage able to help numanity manage its linear time. Ultimately the aim would be in have multiple pro
The future — forward to help numanity manage able to help numanity manage its linear time. Ultimately the aim would rapulte a radical complexity. But I believe there is a 50-50 chance that the catast rophs scentario will be right.

tiple ds ts streams. that it is virtually useless to plan for the future as predictions are

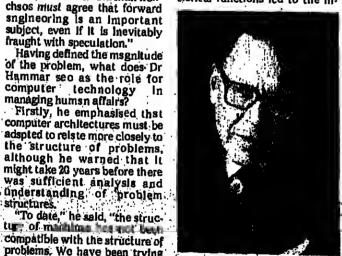
Dr Hammer believes that although there might be insufficient understanding of the structure of natural problems. It is clear that parallel and array processing architectures must be developed now, so that tech-nology will offer the tools for problem solving once the nature of the problems is better

Dr Hsmmer slso hlghlighted sdysness in word processing and text editing as of major significance which, by the turn of the century, are likely to mske existing human secretarial functions redundant - snd he painted out that in the US there are currently 10 nillion people carrying out these functions. The first Important break-

through in this ares, he said. would be in print-to-voice transformations. There already exist systems which can sutomatically read text and provide crude voice output, "But soon the synthetic voice will be refined so that it will even have a Gernish necent," Dr Hammer sald self-mockingly, (He has, such sn accant, having been

Germany, although he was born On a longer thnescale there would be systems which provide input and print-tn-print innguage translations. Although limited versions of these types of systems inight be available within a relatively short time, ho said it might take 50 years to

develop gonuins systems that would fully understand natural voice input. The way in which such systems could obsolete human clorical functions led to the in-



"We no longer live in a stable and unclustered world. When there were only a few hundred or even a few million cars, the car wen not e major problem; today there are 200 in cars in Amarica alone."

As an example ha took that ayitable question that is cur-most common of DP applicationally occupying the minds of so tently occupying the minds of so many people: how will society cope with the increased unem-ployment that hight be caused through the growth of techno-

"The time has come faring rention and aggressive or ticipation by ordinary citizens: force governments to sir examining and planning for t

"It is time to charge policy clans with global responsibilité beyond their jorrochial cancer. for a narticular local nrea-

"It should be a Duited Nation equirement to hivestigate way of using technology to salve or problems. Otherwise the work will go harkrija, ar we will b stroy nurselves in some other

to the transfer of the proper south a separate of the

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Dol policy 'almost totally useless'

policy lowards computing in the UK is "almost totally useless" coherent voice to rivil the "selbecause it is concerned "only with the industry and not the users," according to Gerry Fisher, hend of management services for Associated British Food and former president of the

Fisher was commenting on a speech at Eurocomp III London nst week in which Martin Lam, head of the Computer Systems sud Electronics division at the Doi, outlined the Department's current policy for computing in the UK (see panel, below).

Fisher said that other countries invest more in the use of computers than in the industry

In Germany, he said, about £150 million had been made svallable for computer applicstlons over five yesrs, and the French and Japanese also allocsted considerable resources to

themselves could be at fault for avistion, police and fire service failing to creste a strong systems, social insurance, etc.

---GERRY FISHER much of it with official govern-

lers" who currently dominate the computer industry. Loni disagreed, snying thut the Dol was "Intensely Interested" in users and that the National Computing Centre was a "big thing" In the Depart-

ment's attitude to users. The NCC, he said, would continne to be the main vehicle for direct help to the private computer user, with project suppart from government funds. Lam slso emphasised that the

Department is concerned with providing "the educational, and training ar re-training, basis to developments in nilcroelectronics to proceed and to give official support to microprocessor / mlcroelectronics applications in all industries."

And he added that "much is olready going on" in other applications of computing such But he accepted that users ss medical diagnostics, civil

ment support. He slso said that it was wrong to draw analogics with support given in other countries because

A number of delegates no Euroconip commented that ments" but criticised it for

Resy Atkinson, director of the Central Computing Agency, said that he believed in the promotion of the use of computers os well as the industry and said, "Any industrial strategy must be based on a constructive dialogue between users and industry."

they often included items in their overall support figures which were not usually regarded as part of government support in

there was little to disagree with in Msrtin Lam's speech as it was filled with "motherhood statefailing to give quantified figures on support or provide definite deadlines for specific develop-

> cal contral applications. lts own msnufscturing plant,

Ventek, which selin Detepoint nyntema in the UK. Leeking en is nesocietion chnirman, Don Cincinnati workers set up Mexicans'

own manufacturing plant THE business systems affshoot of Cincinnsti Milacron's digital Cincinnati Milacron until then.

contrals aperation is to be sold

to a company, CSD international, farmed by employees of Cray plans Cincinnati Milacron's electronic systems division. The product broadening its product line with lue is built sround the 2200 a scsled-down version of the minicomputer, originally deve-loped and still used for numeri-Cray-i, and a model to slot between the Cray-1 and the new Cray-2 which is currantly under CSD international is to set up

visit A TEAM of olficials fram

Mexico has visited the UK to lesrn about British capability in computing. A series of presentations, organised jointly by the Computing Services Associotion and ICL, has bean given to the Mexican National Co-ordinotor for Computing. Several software houses gave

the Mexicans briefings on their products and asrvices.

Marketing weakness

DEPARTMENT of Industry policy tewerds the computer industry should not aim at "Import substitution in its nerrow sense" end the UK should be prepered to licensa technology from abroad if it is more economic then re-invention. Boosting exports is more import-

marketing rather then technology end should "consciously put more effert into prometing developments which can be morketed

Thate were key peints mede lest week by Martin Lam, head of the CSE divinton at the Dol in his Eurocomp speech outlining the Department's computing policy.

He said that the convergence of telecommunications, camputing

and control engineering mede it impertont to provide e "censcioue co-erdinetton" of pelicles in these ereos.

There would be improved contact between the secretarinta handling bodies invelved in developing computing pelicy, such as the Science Research Council, the Det's Computer Systems and Electronice Requirements Board and the Ministry of Dafensa, ha

Lam emphasisad that "we about ragard the humon invostment in computing as at least as important an our meterial investment and should thus put more amphosin on computer training and education, including the introduction of computing concepts and produces late schools."

He elso seld the Del would ancourage oc-operation between componies at a European level based on a "hard commercial oppresietion of the businers prospecte."

Users' new chairman wants more influence over IBM products

product developments by finding mora about future regulrements of users is one of the main olms of Des Lee, the new chairman of IBM Computer Jsers' Association.

Lea was elected chairman at a CUA meeting on May 9 and will hold office for two years. Taking over from him as vice-chairman is Graham James, of Empire

TO THE CHARITY Los wants 13th users in the o follow the lead of US use groups in carrying out studies into future product require-ments, and ho was interested in remarks made in the CUA an-nual conference last nonth by IBM vice-president of com-munications, Ray Fentil to the effact that IBM is taking heed of these studies.

Soma of Lee's other aims as chairman include expanding membership, which now stands at 700, increasing the benefits of membership, and strengthening reletions with other IBM user

Shadow users'

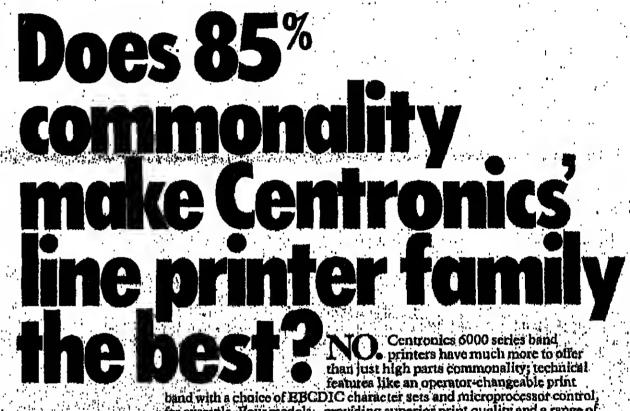


groups like Shara and Gulde end tha CUA's counterparts in other

Lee has been a member of the CUA council for nine years end has worked with computers since 1902, the last ten years at Rowntrea Mackintosh, where he is now a senior manager in group management services.

conference

AN assessment of IBM's SNA by 9. Currier recently joined flichard Currier will be one of Altergo Software from Inforthe highlights of the Shadow matter and presidently worked User Association conference to on advanced TP software for be held in London on June 8 and NASA.

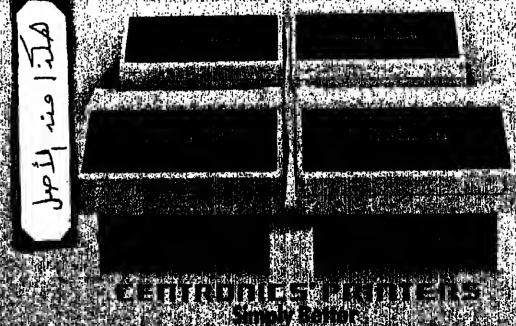


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Oceanic save the world But how does Dr Hammer snawer the cynics who suggest

Trailing behind himself "84 million byten of data, like the head of som

rethinking of people's expectations that education should lead

It worried Dr Hammer that he could not answer the question: What would you do to cusure that society makes the last use of technology while avolding the potentially illsustrous social consequences of increased nutouinthui? At first he said he was "mot

competent to answer." Then who was competent? After thinking carefully, he said, "I suppose un single person, only groups of people working Some time later he cated

rupted the convortation-saying, "Perhaps the unswer is that brought up and educated in human beings cannot find a solution. Which is why my number rely an computers to help - inamiec ant society." Although he was not thinking

hard copy output from voice of robots running the world, he pointed and that already cross puters make many decisions more effectively than any human because the computer enn process more variables governed by complex rides.

For example, in American hunks, decisions on the advisability of offiring small loans are usually tuken by camputer, inhowing experiments which pruved thut, in parallel operation, the computers were mure

rellable than human analysts. "Of course it was nut the computer; not the hardwore and software, but the brainware That is the really creative side of systems bullding. It is human brainware allied to computer systema that provide u potent orce for solving problems," he

Looking into the future, he predicted that by the year 2000 the world would contsin one worldwide integrated computer utility, feeding information to people whore and when they wanted, in the required form,

As en optimist. Dr Hammer man working with computers would be able to cope with our complex systems and return to a more stable era. But he admitted that it was

still a "cliff-hanger" whether there would be a holocaust wining out most, if not all of humanity, before computers could come to the rescue and solve the problems He said that he had often

OUR BUSINESS IS YOUR IBM HARDWARE

EDITED BY PETER HEWITT

Dol moves on Status II marketing co-ordination

AN INITIATIVE has been taken BOC Datasolve, and CTL. by the Department of Industry to co-ordinate the further development and exploitation of Status II, the information retrieval package developed by the Harwell laboratory of the United of its applicability to a wider Kingdom Atomic Energy range of machines than other

The Department, which previously contributed funds for the development of the package. has set up a Status Club. Memhers will have franchise rights to the system in different market sectors. It is olso to carry out an initial survey of the potential mnrket.

Intended to be self-financing out of licence recelpts, the club will be noninistered by the Horwell laboratory. Initial members include ICL Dataskil, Systems Designers Ltd, GEC, Ferranti, text and numerical information.

According to a Dol spokesman, the Department felt that there is a need for a strong UK package in this area. It decided to standardise on Status because systems, notably the Bird system originally developed at Quecn's University, Belfast.

Aspects of Bird had however been incorporated into recent versions of Status, he sald.

Ahout a dozen organisations outside the UKAEA already use Status II, on machines ranging from minicomputers to large nininframes. Applications range from the legal and bibliographi cal fields, to those with require-

The first of a series of applica-ilons packages for lie Syalem 50 and System 70 range of in-telligent terminals has been an-nounced by ADDS UK. Pro-duced by Gemini Computer Systems, it is available through ADDS' distributor network,

ADDB' distributor network, which is etili being built up.
Addspay is a suite of ten programs deating with weekly ond monthly payroll for £800, Addspan deala with sales, purchase and nominal ledgers for £1,500, and Addetock will deal with production planning

end stock control.

Both terminata are compat ible with the IBM 3740, but the System 70 with its extra intel 8080 microprocessor and 8K bytes of RAM, con emulats the ICL 7020 enabling it to com-

Boeing makes own packs available in UK

SOFTWARE developed by Boeing for its own scalur management has been made available on the Malnetream-CTS time sharing service run by Bocing Computer Centres. Executive Information Service

o small onlina system. In place

bureau, a client of mine

cielmed "online data entry will

reduce the high lavel of input

This myth has been so well sold, that it would not surprise

me if mony readers believe it to

some degree. I suppose I'.

accepted the concept at one

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of batch work cartled out by a

managers and bushiess analysts. allows users to atore and The system provides linked Interactive facilities for financial applications, modelling, what-if and sensitivity analysis, forecasting and stotistics, report writing, graphics, and data

The EIS command language charts and 3D graphs.

Reliable fast input is not

involcing system which could

teke its data either online or

offline (Interactive or betch)

modes. This gave ma an

opportunity to see the dif-

when a weakly designed batch system is converted to a well-

designed interactive input sys-

tem we falsely credit "online"

The turning point in my own , with improvements which, in

thinking was when I designed fact, ere not dependent on the

TREND

erences between the modes of

Thare is the danger that

dependent on hardware

GILB'S MYTHODOLOGY

manipulate time series and other dota directly without being concerned about the size of the data. A particular feature of the system is a powerful graphics capability which includes the production of histograms, pie

Applications packs for ADDS 50, 70
The first of a series of applications packages for lise System

Heavyweights join
US patents battle

sides in the current US Supreme Court case on patenting computer software, Lutrelle Parker Acting Commissioner of Patents and Trademarks) v Dale Flook which centres round software for the automation of

in addition to Adapso (Software File, May 4), organisations filling amicus curlae briefa in favour of patentability are Applied Data Research, Software Associates Inc, and Mobil

Filing against is CBEMA -Computer and Business Equipment Manufacturers Association — whose membera include IBM, Sperry Rand, NCR and other dominant hardware

The ADR brief opposes the Idea put forward by the Patents office and CBEMA that software Is an "Idea", a "method of doing business", or a "mathematical algorithm" Instead it argues that software is one menns of implementing a machine sys-

Software pntents, it says, are

The involcing system, with both possibilities, showed there was no difference in the rate of input errors which slipped past progremmed checks. in both batch end interoctive cases the arror rate, as measured by customer combloints and correction due to wrong you get the finvour, but for datalled technology I must

input, was extremely low.
The major difference we observed was that the Interactive antry work took about three hours for a morning post satch, while the batch work took a little over one half hour, plus five-minutes for correcions to the first batch run.

Not really stranga when you consider that in the interactive system the machina spent a lot of time waiting for the human to key and think end interpret nandwriting, while the human spent time walling for (low priority) response time,

Cartein "Instant" demands on the system were handled by the "same day" service objeclives were easily met by tha

oatch system. There was no other diferenca in the two modes of operation, so the online moda was dropped entirely, and the system happily operated in batch mode for the next years.

I don't doubt for a moment that many readers have ex-perienced improvements when neking the trensition from batch to online data entry.

My objective is not here to say that online is wrong to it isn't, it has its place, and current aconomics favour it.

What I am affaid of is our under utilisation of the poten-tial we have in an interactive system, because we mistakenly believe that online is the soultion, for errors and rapid ser-vice.

The solutions are severe and ahould normally be opplic ns a well designed set of teelt-niques. I will give a short list of some of these soluthins, so that

refer the reader to our book "Humanised inpul" (Gilb and Winthrop/ Prenlice-Hall, 1977).

Error control technique that are independent of online betch mode: I. state clear, quantitative and practically measurable goals for humer productivity and error freeness, at the beginning o your project; 2, don't be afraid to let a certain amount of input redundancy get into the input;
3. make the input codes as natural and simple as possible for the user; 4, make far better getting the products use of file data to check end immediately from the correct input data; werehouse, without waiting 5: provide for adaptive icareven for an online system and ning, by experience in your ning, by experience, in your system, such as self-adjusting product quantity limit-checks or quantity pattern check codes; 6. do not meke your system reliant on humor ability to detect and correct errors; put all your effort into automated error control and take human abilitles as a

bonus; ?. pick up natural data as directly as possible. Avoid computer codes; and, 8 those who are currently filling out your forms should be doing the keying. Those who are currently keying should be upgraded or eliminated from

GILB's HYPOTHESIS: Rell able and last data collection is a technology which is targely independent of the bardware you make use of

your input process.

machine systems that, for technolingical and economic rensums, ure constructed by means of stured programs (ie suffware) and a general-purpose com-

The communy's argument hinges on the assertion that software and hardware are engineering equivalents, such that uny "software ninchine" (ie prugram) could niternutively he built in hordware.

Economic factors - namely the cost of designing and producing special integrated circults - nre cited as the major reason for not producing hardware versions.

In addition to minimum volume nrguments against Implementation in firmware. ADR also points to the greater eose with which enhancements can be unide in conventional

The brief notes that the Court of Customs and Patent Appeals has In print cases found that "hardwire and software forms of programming are engineering equivalents".

The court has also previously established, says ADR, that general purpose hardware is structured by software into a special purpose computer, and that the structure of this special-purpose marhine is different from that of the generalpurpose machine and is deter mined by the inserted software. 'ADR's Interest in the entestion

is more than thenretical the company holds software patients received a third patent for its granted by 11 ct A. bitt Star hardware/software system for telephone monitraing.

One of the software patents. for a method of magnetic tape. sorting, has here obsubited by developments in technology But the other, for the company's Autoflow infomatic How chatter

protection for the product of of the most widely sold old proprietary software package

The company explains it "with the advent of microse paters and integrated circula is missible to build an Autofe marhine system completely hardware, based on the pig ciples covered in the patent.

"Lach of the functions coa In not into one or more chi and the entire machine la would be the size of todsy're colutor and would form a Ne box' The price of such the might he inordinately his

Datamanager

NORTH American users of MSP's Datamanager daladi tionary are hobling their foot national conference this ween Cambridge, Massachustita.

Datamunager, which h almost 10tt users in New America, was the high scoring system out of four da dictionary packages included the December 1977 USA Da probature report in addition scoring 90% of the possit maximum. Dalapio reports that it was the only plata dica nary in portion as advertis munidiately

the conference emis toma ". Altiday).

Coral 'first'

establishment I omnitteet Computer Application, to the Semiconductors Rt f. 80 Cm the system. This is the is nucliquicessol resident (%) life mounter system to pe HECA approval, and has or

Puzzler

THE seven-a-side soccer finals at international Computers finish up as follows:

Analysts Athletic Designers United Hardware Wanderars 3 Software Rovers

What was the score in the Analysts-Designers match?

See page 45 for solution

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The People Who Mainta the Products They

system sites should go some way to filleviating user anger over the scrapping of MCP VI. Sup-port for DMS II is now scheduled o materialise in the first quarter

Burroughs' decision to kill MCP VI (Software File, January 12) shocked many users in Europe and In the US. A crucial fector was the implicit cancellation of eagerly-anticipated support for DMS II, Burroughs' highly regarded database management system.

Some users with plans to develop Inrge online databosas were thereby obliged to consider a costly upgrade to a large Burroughs system; the B6700 and B7700, ond their successors, the B6800 and 7800, niready support DMS II. as do the small machines, the B1700 and B1800. In recognition of user anxiety

to visit its US plant in Detroit and Pasadena earlier this year. According to Tony Bale, chairman of the Association of Burroughs Computer Users in

the UK, this team was given every facility by the company and came back substantially reassured over Burroughs' plans for dealing with the problem. The team, which included two delegates from the UK and two

from Holland, hos now coinpleted a detailed report on its findings, which is being circulated to medium-system users. One of the UK delegates, Eric

Holloway of Alcan Management Services, said it was now clear that Burroughs had made the right decision in cancelling MCP VI. Although there was no evidence that it failed to meet the functional specification,

He added that a serious com-

mliment was now evident to redeveloping the operating sys-tem. The first fruits of this effort would be a level O release of the This would be followed in the

third quarter by release VI.1, which would support DMS I, an enhanced version of Forte II. Support for DMS II was projected for the first quarter of 1979, with release VI.2.

SPEL from Dacoll A PROGRAMMING language

has been developed by Scottish systems house Daeoll to increase the facilities available to users of the DL 180 VDU data entry system. The language, SPEL, enobles the equipment to be used for stand-alone proces-

IBM man to give insight into Ironman ANOTHER opportunity to goin an insight into the Penisgon'e Ironmen project to provided, surprisingly, by the next tributed to Russpushe medium. Burroughs soothes Offer of free development and been unactive to goin a UK subsidiary carrier this vear (CW, January 19) Basic Timesharing is uffering, to scheme. development time

Timesharing is uffering, to qualified UK software honses, free development time on a BTI 4000 system installed at its offices in Slough.

To be eligible, software houses must have experience in Basic and must have an in-depth knowledge of a potential appli-

offer is Hunter Software, which is developing a system for handling hotel reservations und associated commercial accounting. Both companies believe formed expressly to market that there is a strong demond for an inexpensive system in this

The package, being written in Basic Timeaharing's Basic X. will initiolly be aimed at BTl 4000 users. However, Hunter anticipates adapting the software to run on other systems. 'Good software aells sys-

UK marketing mnnnger Mike Payne, in explanation of the scheme. The company, which huilt its first packaged system in 1971, has about 750 systems installed or on order worldwide, 12 of these being in the UK. Hunter Software is a newly

formed software services divi Ltd, the recruitment company.

The first firm to take up the Boole Babbage first in marketing moves

THE latest company to be software products starts off with two Boole and Babbage products for IBM OS users. The company, The European Soft ware Co, holda European licences for Resolve, an online uperations monitor (CW November 11, 1976), and Secure, a new data nccess and system integrity puckage.

PROGRAMMER NOTES

Generated code and macro pre-processors

HIGH-LEVEL language programmers are frequently not concerned with the vagaries of he code finally generated. However, when macro preprocessors are used to provide 'structured programming" constructs in on assembler, the preon two of its products and has FULL approval has he processor output is likely to be the programmer's working

surprisingly, by the next meating of the BCS PL/I

specialist group.
PL/I was one of the langu-

nges originally considered as n books for the development. One

of those who worked on adop-

ting the longuage to meet the Iranman specification, Bob

Meddocks of IBM Hursley, will describe this work to the

specialist group. Maddocka' presentation, en-

titled "The PL/I approach to the

ironmen project," will fall into Iwoparta an appreciation of the

roject as a whole, followed by

description of the PL/

nodifications and axtensions

which were proposed.

The massing, which is open to oil, will be held on May 25 in

Room 46 of the London School of Economics, Houghton St,

London, WC2, Scheduled to

stert at 8 pm, the mealing will begin with the typically brief AGM of the PL/I specialist

How closely should the generated coile reflect the original structure?

Keen Programmer · Notes readers will recognise Figure 1 (helow) us having appeared in the culumn for April 20, It shows ogic and the generated assembicr coile from a macro preprocessor and the stondard Digitol Equipment PDP-11 two-pass assambler.

Charles Sharp from the Nauopsychology Research Unil st University College Hospital Medical School used macros from Waterloo University. Ontario to produce the example. Brian Gilbert, a director of

Octave Computer Projects of Farnborough, Hampshire was eurprised at the generated code. How, he wondered, was it pos-sible for the end-of-loop condi-tion to be tested at the start of the section, ie TST EOFSW. when the original UNTIL macro was used at the end of the section? Also worrying Gilbert were the branches BACK to label L3.

Taken on their own his quarles may seem pedantic, but regrammera usa macros if the

the underlying thought is, will generated code has such magic LOOP INC NPOS

: HA+ve IF. . THEN . . ELSE ADD A, TNEG INC NNEG UNTIL EOFEW. ON. loop until cof found

· A la ·ve

Translated becomes the follow L3: TST EOFSW f so, branch LZ ADD A. TPDS Als tve INC NPOS ...

INC NNEG

L2; ADD A, TNEG

qualities about it? The original mucros served to show the structure of the logic, but the generated code has no immediate flow. Programmers may feel less enthusiastic about the use of macros if the generoted code is difficult to

LOOP, IF, ELSE, END and UN-TIL macros use internal variuhles for lubels and black cumters. An IF macro increments the counters and the END mucru decrements them. In this way, It can keep track of the levels within a luop.
Also the DEC PDP-11

Assembler is sufficiently inwerful to allow macrus to invoke other mncros and thereby cun switch code from one pusition to inother during ussembly, os in the exampla.

But the original Programmer Notes olso pointed out that while macro pre-procassora Improve assembly languages over the manufacturer's offerings, a more logical opproech to mnemonics can also

not complain; they have yet to sssembler and mnemonica. Gilbert cen easily scan through DEC code and understand it, but he finds Data Generel oode virtually impossible.

"I can see the historic basis could virtually draw the circuit diagrem of logic getes from a sample. But it's hardly a pro-

to the linear at the

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Logabax as a systems analysi, was formerly a systems advisor with

David Hymers, previously manager of Dymo's Snuth-Eustern office, has

been promoted to national sales

minager, Forrington division. John Woston, Inrinerly North and Midfords regional sales manager for Forrington plastic cords and Ellini

nddresolng, hus become notional sales mnnager, Ellioti sddreosing.

John Moore previously UK sales manager with Noshus, has been appointed to the new position of

manager of operations for Europe, Africa and the Middle East, Uotil

now, managera within these areas reported directly to the US.

Jim Peorson has been appointed to

mponenis and lis subsidiary, N

the new post of European marketing manager with Sillconix. Formerly he was managing director of SDS

Paul Busse, treasurer of Pertec in the US, becomes corporote vice-

In the UK Mike McBurney. Honeywell's merketing manager for lorge systems, Northern region becomes menager of the North-Westhranch. Alon Balley, who was systems manager for the regional support group in the North-West and Midlands becomes realident Midlonds becomes resident manager of the Littlewoods branch. Brunch systems manager Don Wakerlay becomes systems monager for the Northern region at Honeywell's Cheodle Huime reg-

John Met.eod, proviously a com-juter salesman with British Otivetti, hus joined CMC as area sales monager for the Eost of Scallond.



Andrew Kolmar has Joined Andrew Kolmar has Joined Redifon Computers as freight forwarding branch manoger. His last job was as product marketing specialist with Redifon, John Walsh, recently appointed Ri001 (EFDOS) systems analyst with Redifon, was previously in the shipping department of Meltoy Playcraft, where he was responsible for export and shipping documentation.

ping documentation. Formerly South-East branch manager with Redifon Computers, Georgs Snalgrove has been promoted to Northern regional manager. Samard Ward, previously aristol branch sales manager with aurrougha, has joined Rediton and South-West branch

AGM. BCS Glasgow branch, Danlet Brown's Restsurant, Olasgow, 18,00. Brown's Restaurant, Carra HAV 23

AO M/Mors communications, Roger

Association for Computing Pye. Association for Computing Machinery, Polylechnic of Control London London WI, 1820.

A management guide to delevaso plan-ulag, sominar. Daju Processing Manage-ment Association. Gloucester Hotel. Lon-don SEIO. Earolment Terusa Servard, 01-637 2171.

AO M/Film phow. DCS. Reading branch. Physics Lecture Theore. Reading University. Whiteknights Park. 20.00.

AO M. BCS, Presson branch, Walcrico Hittel, Presson. 20.00.

Online computing, seminar, BCS/NCC, Cultoden Hotel, Selfast.
Model and Function. Nitchast Jackson, Dept of Computer Science, University of Strathelyds, John Andorson Bidg. Retenance Glasgon.

4400. cxt 3532,

MAV-23-25 Micro/expo 78 Sybax. US Trade Cemer, Neully, Paris, France MAY 24

Solving miced plant location problems Monique Gulguard, Kurt. Spiniberg. SCS Mathematical Programming Group. Lon-den School of Economics, Landon WC2 1830!

16.30)
AOM/The Chinese computer industry.
T. Brooks, BCB, 8 Wales branch, GKN
Sports Citip, Stoper Road, Carollif, 18,00
Dobate, siashirame v. mini processor.
P. Cilitan, BCB Leftestar branch, James
Went Building, Leteniar, Polylechnic, 1804, British Institute of Management.
Bedat. Holal of hastories and Management.

I. Capitaribano, 1945.



Northern 5-a-side

QUAORANT play ICI Cantrol Manage

mant Servicao (1) in the linel of the Nonhorn live-a-sida Knock-out cup, a

toothall tournament involving

The semi-line results are

Quadrant 5, Sercleys Sonk 4 ICI CMS (1) 4, Cibe Galgy 2

lacins from the computer industry it

hasler and surrounding aroos.

The linal lakas place between 7.00

pm and 10.00 pm on June 1 at the Sala Loisura Cantra. Bload Road,

Sala. The winners will receive a shield given by Combyla Services.

organisars of the lournomont. For luther details contact len Eacon of Combyle Services. Tel 01-24D 3223.

Dovid Ekberg, group vice-president of markeling of the US Daio 100, hos been elected to the

board of directors. He succeeds

ice-president and chief operating

chairman of Compuscan, who has resigned his position on the boord.

Glibert Fené becomes mansger o Beckman Composants SARL, the French aubsidiory of Beckman In-

Bruce Bombrough former exaculive

i HEAR from Downlime's extensive network of agents hehind the Iron Curtsin that all is complises lour divisions They are Olvision I: Jadpu, Dolascane, Rank Xerox, SIA. Comshara, Gryphon. not sweetness and light in this Soviet computer business. II scems that the Byelarussia Division II: ICL, Allargo, Alkins, Lambath C C., John Lawis, Dalasolve Power Engineering Construrtion Department has decided Olvielon III: Gill & Dullua, Xarox to sell its Minsk 32 computer, (London), Delacolva (West End), 3Ms. Airfix, JPC Victoria. Division tV: Bunzi Data Systams, UCSL, C. J. Sees, Stoffscens, Wellocompisining that minimum lechnology is mure irrenble

than it is worth. The machine was acquilred in 1973 when having a computer was a matter of presline smong manogers in Soviet ndustry. (Things are different In the Esst, sren't they?)

Trouble behind

The department's chief rngineer, V. Bobrov, confesses now, "We were just influenced by fashlon. We thought if the machine could think, it could think for us but it just gave us

ARTEAR

TOBHIBA

A possible indicator of a new trend in the fest moving

enca in London

ellows the user to store alphanumario inform

The computer was to be used for production and inventory control and the like. The deasked Novosiblesk Programming Centre for 31 different pro-

grams, and was odd that only 26 were possible. Then only eight were artually produced The department complains that "out of five programs arceard, three were good for nothing." Also, stall found that they had to rheck all the our

put by hand. Eventually it was decided by workers, muttageneed, and the winistry "in silent agreement"

nesell the computer Ufear the KBH meson to nev agents, trying to jam their temsmissions. The List torragraph of thrit message came hreamh thus

"Day by avd the list of ockers

INCIDENTAL INTEL. LIGENCE: Mortin Gordnes, the well-known manufacted of ntothemutics and writer for Scientilic Amorican, lives in n stroot in Hastings on lindeon called Enclid Avenue, He swoors blind, in the face of

not carryinwg on g assignments are longere longer The okesir is dagatwist the conter

I have to challusion their but the whole ston [already come out in Previo

Bugs in the system ADVIII I to public teletic

tuers When producingly motional material for its processing systems, he inake typing mistaker & tine a browlitte for one for starts out by talking the sylung systems," and a goes on to refer to ha Mystems?

After all, you are presure. using the product, and a unght give people theing

is alphanumeric

A PDr KI I SI2U a doubted that can sharing

telephone uninderty and other alphanummi

bottent into for quick reference at a later time!

I lambed to be the first alphanemetic pie

calculator the Africa Motor Steam storropty.

digits of alphase tic and eight digits of size

thing the track of the findents

memorie, the of an extra memory unita-

expand the decrease against error and 15 against 4:

Alphenometric cuties are neste by pulify?

all telephones for the first of the superspectation of the superspectation for the first of the standard of the superspectation of the su calculator in latter in to and depressing

from petroutage and other mathematical cake

Information is term seed by precing the Res

fullous and emercing a her wind such as them?

of the person is here to be home toucher you's

to recall, or his sutting requestially thought

the morning that went tone desired a never on the

dering forte sti maly has an eight-sight be-

(1) stal display manies and telephone numbers

mutified complete from their keys to allow

been advoduced by Loghster

June la lie catried out

Icomost

are becoming much more involved with communicating sion that you can't belo onsusoment from Isia friends rather than producing physical that he came by the house at the escal to correct the mind things. berauer the correctionly normal way and that to bought it for no incetious rensus. This was because the "electhey are too hard louse. tronic revolution" was extending the human nervous system And now a pocket calcultator that in the same way that the Indust-

Knowledge was becoming a much more important component in modern production than capital, labour, or raw materials. Stonicr asld. This was causing enormous changes in employment patierns, and everyone in society must understand this in order to ovoid a great deal of distress.

risi revolution extended its

interviewing medical patients.

We were rapidly becoming a

communicative society rather

than an industrial one, he sald,

meaning that cveryone's lives

predictions about where information tachnology will take ua.

He introduced the interesting Idea of "Information recycling," whereby scientific papers could be analysed by computer to see whether they were original and whether they contradicted each

David Firnberg, of the NCC. discussed the woy communications would enable people to live

Success EXHIBITORS at Eurocomp, In-

cluding componion such on Tek-tronix, GEC and Altergo, were generally unhappy with the tack of interest shown in them by delegates. One exhibitor enswared the question "Why are you exhibiting?" commenting wryly, "We are so successf we don't need any publicity."

In smaller, more spread-out groups, breaking up the cities. To this end, he said, it was important that telecominunications tariffa were not distance-

importance to aducation of resdy occess in schools to organised computing, orlanted

Evans pointed out that a significant thing about the "new

significance of viawdate, calling in publishing" (the earlier ones being the introduction of the elegraph and computer composition to newspapers):

to the rise of "cottage Industry" ublishing, as very small organsetions could buy space on the ylewds ta computer. Thie, and an increase in the number of television channels, could soak tions and was currently invosimployment in people communicating with each other.



accepted standards when lendering systems in the public sector was change itself, to cut prices to highlighted at a Eurocomp session described as an "international meet the challenge from the still dropping. When it gets

However, the attendance at the session reflected one of the prime problems faced in trying to establish a coherent uscr voice on menufocturer Independent problems - a lack of urgent Interest al grassroots

Inaugurated in Brussels in February, the Conference will take pince at six-monthly intervals over the next two years, the

next being in Munich in October. Panel chairmon Christian Gorric, deputy to Christopher Layton, scianca and technology director at the EEC Commission, talked about how the conferences will enable users from itll over the EEC to provide the Commission with information on their needs.

At the same time the Comission will be able to inform users about its initiatives, such as persuading computer purchasing dapartments within EEC mamber governments to insist that computer equipment suppliers conform to atandards in aress like I/O interfaces and terminal operator guidança languages.

The conforences should also cnable the various user groups to discuss matters of mulual nterest like data protection and the effect of the common carrier monopolles on transnational

The one member of the panal from the US, telecomms expert John Egar, commented that communications within Europe, particularly in the military area, are not what they should be.

Bernard Nivolet, secretary of inforep, the group that will represent Franch users at the conferences, was interested in the vulnerability of users whan dealing with their suppliers, in-cluding IBM, and pointed out that even computer users as big as motor manufacturer Renault with 600 computers, still thought it necessary to belong to inforep, which has been doscribed as a cross between tha National Computing Centre and

the Consumers' Association. Nivolet, who works at the French computer science research institute, Iria said that Inforep was activaly involved with user/manufacturer relamaintenance contracts.

Micros blaze the trail into the 21st century

we know it today will have a plug-compatible manufacturers. very thin time in the 1980s and On the software side, Barron suggests that It may not be low-cost microprocessors will spearhead the technological economical in the future to write Irall into the next century. specialised programs for microsystems becouse they will be-

Those were two main trenda Iu emerge from the session come too cheap ond it would be looking to computer systems in better to buy a unit suited to a particular task. the year 2000.

Many of the predictions, however, were for a more immediate cost devices which are useful to us," he said. "Also, by 2000, there Ilme-frame. Computer pioneer Carl Hammer, who chaired the on, predicted, for example, that by 1985 there will be an Il-chip micro with the equivslent power of an IBM 360/30 (for more on Hammer, see page

it was consultant lann Barron

who predicted the lough road shead for existing manufac-He besed his prediction on the fact that major computer companies are being forced, by the very rate of technological

tion to the reducing cost per bit of computing power and the effect it was having. "At one time it was only economics for people like top scientists to use computers,".he sald, "but it has now come down to the cost of a typist, and it is

"We need to exploit the low-

should be an analogy of English

used as a programming langu-

sge to provide intercommunics-

Fred Lamond, European edi-

tor of Auerbach Publications

and regular contributor to

Computer Weekly, drew alten-

tion between systems."

going into schools. By the year 2000, computers will be the most plentiful thing around; they wil have lost all their mystique."

COMPUTER WEEKLY, May 18, 1978

The impact of dwindling costs and higher processing power would ulso benefit smat businesses by making then more dynamic and competitive he said, as well as leading to the setting up of communal work centres where people did no travel very far to work. Much work miglit be undertsken it the honte Itself, as well.

The younger generation would also benefit. "Children will not be carrying around cal culstors as we know them." said Lamond, "hut they will have the power of, say, sn IBM 360/40 With this power they will be able to do gulle complex things."

Getting rid of old ideas is hard and something that the computer industry seems to have trouble with, according to John Race of Bruncl University.

June 19 The day of the Motorola

Institution of Electrical Engineers, London.

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close change Tonetal order	Pleasa	avolce my company

Company_

Deirdre Kibble 'MICROFORUM' Motorpia Serniconductors, York House, Empire Way, Wembley, Middx.





Tempo launched the competition within the computer industry after professional artists had failed to come up with a suitable design.



TIS SUPERSONIC, MAN -AND REACHING FOR THE



CAN'T WE SLOW IT DOWN A BIT - AND SEE WHERE IT'S GOING TO BE AT?



ONLY ONE WAY ___ SET UP A COMMISSION!



MAY 24-25

Process control in the cleckricity supply industry. P. Docherty, BCS Process Control Group, CEGS, 20 Newgate Street, London, 10.30, Numbers limited apply Or P. K. Andow, Lotighborough University of Technology.

Microcomputers, the challenge of new technology. A d'Agopoyeff, G. Fisher, et London, W. Booking, C. Pavlott, BIS, 01.633 6866.

AOM, Dale Processie.

Englacers, Birdeago Walk, London SWI

Saftware angineering seminars — database support for system building. P. Henderson. Oxford University. Nuclear Physics Lecture Theoire. Kable Road. Oxford 1830.

Exeter.
AGM/Pilm show. J. H. De'ch. SCS
North Wilts branch: Churchill House,
Weetton Rassett, 20,00.
AOM. BCS Leeds & District branch.
Parking Hotel, Leeds 18.30.

Management Group meeting, 18M Computer: Users Association Birmingham Metropole Hotel, Birmingtion,

MAY 25

AOM. Dete Processing Management.
Association: British Insulute of Management, London WCL

AGM/Theory and practice. P. Samoi.
BCS president, BCS South-West branch.
Bowmoor House, Wenford Hospital,

to receive viewdata by 1983, ITT

managing director, speaking at last week, said that the company saw total sales of ylewdataequipped talsvision receivars growing to over 2.5 million sets Also at the Press conference

was Bob Morley, of the Post Office, who said that although the corporation was intending to major initially on the information retrieval aspects of Prestel viewdata when the public ser-

vice starts, it was eagerly looking towards the expansion This includes interactive ser vices like electronic funds transfer both Barchayard and Access are heavily involved in preparations for the service. The 20 slot expects to see a growth in demand for superior sections is the service on the service. The 20 slot expects to see a growth in demand for superior sections is taken on microsic registric of

to receive viewdata by 1983, ITT Moriey indicated that it would inlingibure and Management Products Division be at least as weeks before the are expected to be specified to b

CONTROVERSY IS BIOWING IN

Critics claim they are an indicafor of the future inversorship their defenders say they are useful in understanding delinquincy and anti-social behaviour According to the Japan Times a Tokyo English language news-paper, one headmaster defends

paper, one headmaster defends the tests by scoung they are "also useful in pointing out laber! problems among students who sell desire or who children who sell desire or who children appear completely harmait."

The computer lest asks 7th desires such as "Dd you find a hard to study?" Dd you have strong interest in the opposite was sed. Do you ever her orter despends and so to her a series.

despende and go to place."

The computer then Japan over the increasing use of the answers and computers in administrating personally tests to school students. On condition of the answers and condition of th "Renalles" or " meet use

Council undsir

The equarit all has EDS disc prorage thandle tales relephone Me

tiver this next two years 1300 tom printer and kings track tape book. The con-an ICL 1901T who 248 the

ultion in a segmented form to the name in hell the telephore enclosing amaker and hell the line number Apair from felt plante pundstre other plat hall spects as stice is appreciating und mathematic allegants used in the office of he engineering elt pati le atores da press To make the facil may of its storage took. To historian the use of MOS me many in the cake. we that all input can be stored even where calculator is switched off, for the bledy billeries, which is find to be about the will Price of the farbilis menta Male 39 o 1996

pocket paloulator market, the Toshibs Memo Note 30 as telephone numbers and names, and to keep it in memory for up to eyeer. It has 30 independent CMOS VAT, and it is distributed in the UK by live attinut titing Products of Sing

WITH market estimates now indicating that 12 per cent of all UK households will be equipped scheduled to start next prouting

System wand can ten with The employers les

Eric Bates, the Division's UK Student test controversy managing director, speaking at

APTER daing the said printer and seven flat City Council is to speed the

uption without a few tipes of the few ti



Revolution

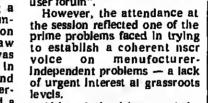
in the air

CW REPORTS ON LAST WEEK'S EUROCOMP 78, HELD IN LONDON

REVOLUTION - variously described as the second industrial revolution and the electronic revolution - again emerged as a recurrent refrain during a discussion on the future developments and impact of Information technology. This Ilme the forum for discussion was a lively Eurocomp seasion chaired by Dr Chris Evans, computer scientist, psychologist and imaginative user of technology at the National Physicol Laborotory, where he has developed systems such as the Mickie inlcro-based terminal system used for Tom Stonier, an American who holds the first chair in Science and Society at Bradford University, took an historical view of the development of man and his capabilities, and inside some tentative Barron . . . tough road oheod for

Forum for all European users

THE Intention of the EEC to Insist that manufacturers conform to



Although the dolegates at the session were indeed on international mix, only about 30 both ered to attend

But the session did provide an opportunity for delegates to hear at first hand about the Conference of European Computer Associations (CW, March

Firnberg also emphasised the towarda applications, not elec-

"Numeracy is not enough, Shirlay Williams," he said, ref-arring to the Education Secretary's recent ramarks in Computer Weakly about the ralativa. importance of basic maths and computer education.

industrial revolution" we are going through is that we are ware that something is about to happen, unlike the old one.
On a more down-to-aarth level, Alex Reld, from the Post. Office talkad shout the

He pointed out how the vestly reduced cost of production of material for viswdata could lead

THIS board offers examinations in data preparation at both elementary and intermediate levels, which haslcally test the ability to operate keydepression machines fur punched cards or paper tape.
At present the board has a

small bank of appropriate docu-ments used in compile the Intermediate examinations but we

receive any documents which the renders of Computer Weekly think might be snitable. If there are any queries I would be glad to answer them over the telephano on 01-839 2366, WENDY RILEY

The Ruyal Society of Arts Examinotions Board, t8 Adam Street, London, WC2N 8AJ.



To: The Editor, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU

RECORDS IN RECORD TIME.

NEB must act now on DP investment

Sir Keith Joseph (CW, April 27). It showed that the has a keen understanding of our industry, but saidly it showed that information technology can saidly it showed that information technology can be successful. On this basis is a supply of 65 million sprend over 20 courses.

ling this need. We cannot wait for what the needed now.

I would, however, recommend that the NEB Intereu,

I WAS nost inicrested to read your interview with Sir Keith Joseph (CW, April 27). It showed that he as it has made with Insae.

easily hecome a pulitical ball in a gnnie between the Labour and Conservative Parties where both the Labour and Conservative Parties where both

There are many uther problems for our ingos innovators and small computer company entrepreneurs need venture capital — and with the financial climate as it is today, the National In the international markets but venture capital Enterprise Board has n vital rule to play in fulfil-

The Editor wolcomes letter as subjects published in Computer Wookly, or on original topic. All lotters must be accompanied by the writer's nome and ad-

carlon. Alt letters are liable to be

cut at the discretion of the Ed.

Can high technology would like to add to this, and possibily to hulld up a similar hank for the elementary examinations. I would be very grateful to receive any decorporate which

THE BBC Horizon programme industry — and most terrifying dealing with the impact of of all is the ominous silence from nilcros, demanded urgent action our government." (CW, April hy the government or, at the 13). Later he said that we lack very least, n strategy for the computer industry. There follows: lowed sume brave words by Tim Wickes " . . . the UK virtually

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The Polaroid CU-5 hard copy

tho screen. This stops glare and sets the CU-5 camera the precise distance usery from the screen. There's postpartial forms in the screen. There's postpartial forms in the screen. There's postpartial forms in the screen in the

camera, for example, takes a range of

with the correct hood flush against

You simply hold the camera!

hoods to fit virtually any CRT

screen size.

I sm in the unusual situation

exposure's been set for a

particular CRT screen, it need never be

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many types of screens, including computer terminals, closed circuit TV and oscilloscopes.

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The Applicationa
Polaroid instant records can be produced from

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100% government financial backing. I shall be happy to give details to any Inquirer.

Although refusal to develop new products, even at no risk does mean that that particular of having seen o major British company will slowly deeline, I stands still, almost intally inck- electronics company refuse to am convinced that course ing direction und positive plans exploit what they admitted was of action gives the best short and for building a sound and strong an innovation of major potential medium term expects

potential presents to a manager in a typical British enmpany. In all the companies that I have studied, I do not believe that the existing management would survive a tenfold increase in profitability of the company.

Technology and product advance of anything above minimal speed necessarily implies luss of control of the company to the technocrats by the ruling technology-free

s no ense on record of the British government giving significant support to any industry less thon 25 years old; that government support for an industry is proportional to its

consarvativo, and soam most portial to a return to the pre-industrial, feudal social structure. Spoin is our model for hehavlour in the immediate post coloniul cra.

Accidents sometimes happen, not it is possible that high terit-nology will gain a real facthold in Britain, just as it would have been possible for new methods of cresting wealth to have been allowed to develop in Spoln by the rump which ruled and then lost their empire.

it seems clear that what the British people will permit is cos-metic support fur high techno-logy; products and developments con bo supported, but support must stip well bofnre there is the possibility of them creating profit and thenco o new

What I see, in both private industry and in government, is money being burnt up in the vicinity of major high tecimology potentials, as a cosmatic to hide the unwillingness to allow a threat to our society's atability. That way, high technology can be discraditad, and its ating

Admittedly our society will han decline, but at least it will decline in an orderly, decorous shift allowances as a perk.

St Albans,

Say cheese -provided it's British

WITH inference to your report of the contemporary on the involution of the contemporary on the involution of midden to provide a part of the contemporary man an appeal of the contemporary man as good a years on any to the top deport the appropriate a problem, in a way or just revealing an appropriate and the contemporary of the contemporary of

tor, unless correspondents state that their letters may not be set

discussing the career and security threat that a major innovation with majur profit

Benson (CW, Mny I) is typicals other trade unions with whitewe operators must align outselves, then it is psianly It is not necidental that there obvious that we must go It alost

- not only for the guod of our selves, but also for the rest of the; working class. With the Ludditu fear of technalogy and the bookward thinking of many trade unless, they would like to see British age.

The British people are deeply technology held in check while

as is happiening at present, he dapanese and other technilogical nations farce out; remmy Into dire siralis. The problems trado union should be tackling are those of the distribution of wealth and what life will in like in a tech :

nological soriety. The impleyment is here to stay hreausy, as technology lo creuses, so ton does nutomalle and unemployment. The unloss; in fact all of us, should strive is romove the stigma attached to

being unemployed.
As the "de-skilling" of jobs: progressively continues, we niust ensure that nur lives be come centralised around out pastimes and leisura actividet ond, not as it is today, around our careers. We must educate people to make batter use of their spara timo.

Turning to Mr Benson's article, I see he en mplains about differentials between operator, and programmers being eroded.
Yet he himself admits to the

de-skilling of programmert operators becoming more tech-nical and increases in shift allowences. It appears to me that M Benson, like many computer is dustry managers, looks upos

What we operators strive to the local strip in the local strip is a liveable wage without shift allowances, which should be calculated and shown separately on our wage alips, as is legally on our wage alips, as is legally

required.
Mr Benson, like many others looks at the operators gross wage when comparing it with programmers and the like Wroperators are used to many ment playing this game believed from Mr Benson this gatitude is shocking and department.

furning.

If he were to remove the skill would notice how low paid with

operators really are
operators would like to feel
if operators would like to feel
their own trade union.
We only too shed to organic
treeting.

OP SPOT By Bernard Allen

The importance of documentation

job and, following the installa-tion procedure, tried tu contact

the programmer to find out if

tunately the programmer could

not be found. Again following

the installation procedure, the

operator then cancelled the job.

with the result that the program

mer was extremely upset be-

cause he had to re-create the

library, which meant consider-

able work on his part. The

operator was also unhappy for it

meant that he and his colleagues

How could this situation have

which would have been useful

here, is to maintain a run book

that by submitting each job to

the computer room accoin-

The run monual should con-

tain, for example, a description of each system along with its

JCL and restart procedures. De-

tails of input and nutput

requirements should also be in-

clear that the run sheets sub-

mitted along with the job should

inve some information about

and whether or not it can be

From the above example, it is

nanied by o run sheet.

Understandably the program-

library was corrupted.

there was a valid reason. Unfar-

to be a well-run, co-ordinated und it is essential that staff are able to find old information about the system and major

Good documentation ensures continuity when people are either sick or on holiday, and is vital at sites where contract staff

Since the prime aims of documentation are communication and instruction it is important that it is written clearly and simply, with no chance of any misunderstandings.

At some of the larger installswould again be blamed unfairly. tions a technical writer is employed on a full-time basis been avoided? One of the best methods of documentation. ond one of his duties is the maintenance of operationa documentation, but at the smalor nyanual and to supplement ler sites it is often left, for example, to a shift leader, who has too little time to carry out the function effectively.

What happens when there is a lack of documentation? Let us consider an occurrence at one nstallation I know of where the matter is given scant attention.

Contrary tn installation atandards, a programmer used the testing stream to submit a job using a system ntility prngram in order to compress n program library, or file. Now library compression

often takes o considerable time. and the job soon exceeded that allocated to testing stream work

Other informatinn on the run the site. sheet might include:
The console operator had no '1) Class of job. (The classes

Courses for ops staff

Several one-week courses for operations staff have been planned for this year by Hoskyns

The operations supervision course is intended for operators who are about to move into a supervisory position. Seven more are to be run this year and all will take place in London. The next is on July 3 and the fee is £165, pius VAT.

For shift leaders, an operations planning and control course will include scheduling, the user interface and operations planning. Seven more are planned for this yesr, and the first will start on June 12 in Bournemouth. The cost is £215, plus VAT, and a fee for accom-

The operations management course includes sessions on staff selection, the DP budget, hard-The next course begins in Bour-nemouth on July 24 and costs 8220, plus VAT and a charge for

accommodation.

For further information contact Tony Thorpe, Education Marketing Manager, Hoskyns Education, 91-93 Farringdon Road, London ECIM 21B. Tel: 01-242 19517

2) Estimated run time. 31 Telephone number of the programmer concerned.

job — specifying the amount of storage required and the volume serial numbers of my tapes and discs to be used.

5) Any other information which the opemtors and programmers think would aid communication.

At a certain installation a file containing examples of each type of pre-printed stationery used at the site is maintained. If Is kept near the printers and its numerical arrangement is in accordance with the numbers issued by the system as a particular type of stationery is re-

The run sheet for a particular job or set of jobs should be submitted to the computer room well before the run is due, so that the operators can make preparations well in advance.

The operators should always be asked for their opinions on the subject, and whoever is res-punsible for writing the documentation should listen to what they have to suy, Finally bear in mind thot

common sense should prevail in ull matters, if a programmer relates some incomplete or in correct information, give him the type of program being used he benefit of the doubt and, if n all possible, let the job run to its conclusion. The programmer concerned should olsn ba told

HINT OF THE WEEK

Erasing OS output modified to serve any output

ERASING unwinted output lit the IBM OS environment is the subject of this week's technica

in the OS system is a Pseudo-writer prucudure, sometimes called SCRAPIT, which is used to emse the Z class JCL listings produced by the system READERS. WRITERS and MOUNTS.

Now SCRAPIT is the same is any other writer procedure, with one vital difference - no orinter device is allocated to it because the .Dummy paremeter is specified in its

Thus the procedure may be

class like any other writer. This is achieved by the following OS F SCRAPIT, CLASS =

output cinss

This is very useful, for example, when a programmor has "honds on" time oud has produced o lot of output which is nnt needed. Of course, modifying the procedure in this manner should be corried out with extreme care. As soon as it has done whot is required, SCRAPIT should remodified to eater fur output

Opcomm disco in Coventry

AS mentioned in Op Spot two wasks ago, Opcomm, the Covantry-based operations group, is to hold a large social meeting for operations staff and

Pete Brimble, the group's Olnted Social Secte-

Alhambra public house, Silver Street, Coventry on Thursday, May 25, 8.00 pm to midnight, There is on admission fee of £1 and a buffet will be provided.

Tickets may be purchased at the door or obtained from Mike tary has arranged for a discotheque to be held at the Coventry, CV5 6NR.

Operators often complein that nabody lietens to their point af view.
Well, Op Spot is listening and Bernard Allen would like to hear your opinions and ideas an all matters relating to computer operations.
Yaus letters should be sent to Op Spot, Computer Weekly, Dozser, House, Stamfard Street, London SE1 SLU. Telephone oalls are equally welcome and Bernerd can be contacted directly on 01-281 8035.



Waiting for the right moment...

transemission components manufacturer Frank Wigg-lesworth Ltd is watching the colour of molten metal change as it coals, waiting for the right moment to pour

The wide mago of management information being generated by this worker as he carries out his jab is now available to the Yorkshire-based company on a Dato General Novo 3 minicomputer which it has installed to handle stock control, order entry, purchase edger, sales ladger and other management informa

The compony's plons for future use of the system include the production of numerical control topes for outomatic machine tools.

Amdahl first quarter profits up 78% despite one-third price cuts

sales up 68% compared with the quarter. corresponding period in 1977. Turnnver was \$63.75 million and French success pre-tsx profit \$19.13 million.

improvements were schicked despite price cuts of 35%.

customer acceptance, and the existing ICL users.

FIRST quarter profits at Amdahl new policy meant that six more were up a formidable 78% on snles were recorded in the first

Amdahl points out that the PENETRATION of the French market by ICL has been helped enormously by the success of The company has changed its the 2903 there. Out of 260 aysaccounting policy so that sales tems installed, 65 have gone to are recorded once a machine is first-time usera, 138 replaced handed over to the eustomer, mechines from ICL's competi-Formerly sales were only upon tors and only 57 were ordered by World Cup system

A COMPUTER-BASED tries aystein will ald the running and co-ordination of the World Cup finals to be held in Argentina next month. The system is based on four Ellex minicomputers at centres in Bhenos Aires, Rosarlo, Cordobs and Bahis Bisnea, and in all has 49 terminals throughout the country. The equipment, worth about 62.25 million, was bought from Frederick Electronics Corp of the US, by Entel, the Argentine telccommunications authority.

"Here's what I want in a payment processing system." microfilm. process

You've got it, in one!

source documents and directly eapture documents os they are read, can read pre-printed, imprinted, computer printed, MICR encoded ond hand printed characters automatically. at high speed and with great accuracy. One system to allow you to key at the

same time that data which cannot be

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One stand-alone system to take your endurse and microfilm your original from them the dats you need to put into One system to provide you with the your computer ayatem. This means you processing power to prove that the data

is correct.		٠	•	10.0
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Company	:			
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got the one system you need. cw 5



ITT enters the 'personal' market

sion confirmed last week that it is to enter the personal computer field, aeiling Apple II nachines (CW, April 27).

The announcement was made at a press conference to introin a wide variety of TV-based applications areas, laciuding viewdata, teletext ond video cassetta recorders.

To be known as the ITT Computer, the equipment is schoduled to appear in the UK in the autumn, and a minimum configuration machine, 4K bytea uf RAM, ia expected to sell at about

ITT demonstrated the system working with o speech recogni-tion board from Heuristics. This will be available as one of a range of opilonal extras and Houristics board specially deve-

aiready available from Personal Computers in this cauntry for £165 and offers a 32-word speech recognition capability.

In the long term, one of the moat intereating parta of the agreement between ITT and Apple is not the actual sale of Apple Ils by the glant multinational — though it is not insignificant that such a large company should feel the need to have a presence in the market. It la that the two companies are talking seriously of a technology give ITT the right either to buy

bonrd levol up, and then package One of the prime reasons that ITT has decided to enter the personal computer field is the fact that in the US, the 1978

inpackaged board systems, or

even build systems from the

pected to lop 100,000 units, and that all the pointers show that Europe will inevitably follow

> The campany's market intel-ligence indicates that around 5,000 systems, with a total value of around £4 million, will be sold In the UK Ihla year. By 1982 however, it expects to see some 225 000 systems sold.

It seea four main market aegments making up this sales growth. The biggest sector it aces is the home user purchasing a system for such applications as entertainment houaehold accounting, home teaching, atc. It sees this as a separate cotegory from the hob-

The other two sectora are in education, and the professional

SOS micro from RCA

sble microprocessors manufac-tured in silicen on sapphire pro-RCA Solid State.

Knewn es the CDP 1804, It is n direct upgrade of the CMOS-processed CDP 1802 device using the same instruction set but offering the advantages of

4 to 10 volt power eupply renge, the device will operate at 9MHz clock frequency of e steady t volts. This gives on instruction

Three options on interne memory configurations ore evallable. These ere 1K byte of ROM and 32 bytes of RAM, 2K bytes of ROM and 64 bytes of RAM, while the third has no OM and 128 bytes of RAM. First deliveries of the pert en

expected by the year and, and expected by the year stat, such as RCA is alreedy working with customers on memory configurations and ROM mask leyouts. One of the serily US customars is espected to be Chrysler which wents the pert for its

Intel gives more

hns released more information about its new 8086, 16-bli microprocessor, which Is expected to be one of the highlights of the event. The details come from the company's house

As indicated previously (CW. November 24, 1977), the 8086 Is soltware compatible with the 8080 and 8085 devices when II software translation package is used. It provides all the features of the 8080 plus 16-bit urithmetic, interruptable byte string operations end improved bit

It also includes such ninicomputer fentures as reentrant code, position independent code and dynamically relocotable programs

Uaing the HMOS process technology, the device has been pocked Into a chip 225 mils aquare, and contains the equivalent of 29,000 transistors.

Internal clock rates are 5MHz on standard chips and 8MHz on selected chips, which means that executed between seven and 12 times faster than on the 81180. The enhanced lustruction set also means that programs will generally be between 10 and 25%

The instruction set will uddress operands in several different woys. In general,

In-hit offset address ar la. directly, with huse and/or index registers added to an optionals or lii-bit illsplacement constant

li will offer several variation of the four busic nrithmetical operations. Both 8 and 16-bit urithmetical operations and both signed and unsigned anh metic are provided, with stundard 2's compelment representation being used to distinguish signed values. For handling program flow

two busic varieties of call, jumps and returns are provided one that transfera control within the current code segmen and one that transfers controls un arbitrary code segment which then becomes the currer The device has a bus interface

unit, which maintains a 8-byte fetch-ahead instruction queue, The execution unit extract executes them fast enough to eliminate dead time between h struction fetches. As many a two single-byte instructions can he executed within the time for one memory cycle in a full nverlapped fashion.

Since the execution un lunctions in parullel with the lus interface unit's activities it is largely unaffected by direct memory uccess operations, which also occur on the system

Still growing—with more firms, and more visitors

TIM PALMER REPORTS

ON COMPEC EUROPE

FROM BRUSSELS

frame computer.

than 500 on order, GMS is on the

brink of algning a major con-

tract for System 2000 with an oil

company,
Minifloppies feature in the

Rair Black Box, heavily pro-

moted on the Compec stond

although not featured among

the exhibits. The Black Box is a

microcomputer built around

the Intel 8085, and features Iwo

Rochford Thompson was on

industry shows that the smallest companies get the most mileage out of their investment - and Compec Europe 78 was no ex-

The Computer Weekly-sponsored exhibition which ran from Tuesday 10 Thursday of last week at the Centre International Rogler in Bruasels, kept up its growth record, with more companies exhibiting and more visitors attending than ever before - 5,002 in all. And while the large, well-known companias were broadly satisfied with the outcome, most of the little ones were ecatatic.

Among British companiaa in the latter catagory, Garage Management Servicea of Woking waa enthusiaatic at the response to its products from potential non-exclusive diaributors in the Benelux and other European countries.

Storting out to provide payroll aervices to oil companies and to managa garage sites, GMS turned ita hand to microelectronics four years ago, and developed a self-aervice console for petrol pumps.

Compec Europe was chosen as the launch-pad for a new communications product, a low-cost, attractively-styled telex machine for the home.

The Minitell-X is built around the GMS Intel 4040 4-bit microthe look-out for European based processor, and is almed at Wescode 1240M cheque printer journalista working at home,

tions where a low-cost hardcontrolled by three Intel 8080s copy communication facility is required. Costing as little as £500, the Minitell-X ia styled and features two printers (DIablo HyType 2 or Qume at prewith wood-grain veneer to look nent), one of which prints the at home alongside a hi-fi stereo system. GMS also ahowed its account name on the cheque while the other adds the accoun-Oatapod Systam 2000 standnumber, branch code ond aort alone electronic cash register, code in high definition Magnetic aimed primarlly at the petrol Ink Character Recognition station market. It uses the same symbols. OCR-A and B are 4-bit processor, provides an inavailable, CMC-7 will follow terface to the petrol pump and shortly and other codes will be can transmit data atored in the added later, Rochford Thompsolid-atate memory to a mainson producea ila own dalay wheels for the printer.
Oissatisfied with the atandard With 30 installed and more

ribbon cartridgea supplied by the printer companies, Rochford Thompson has designed its own reloadable ribbon carrier which makes the task of changing the ribban much simpler, and 200 u manth are in demand in the US. Seven of the machines have

been sold to Australia, and two have have been taken by Barclays Bank, which will follow up with a big arder after successful

be launched shortly. Transdata'a hottest properties

without some light relief on the Moduler Technology stend, end

Prices for the printer, which is backed by a floppy disc, start at £20,000 to £25,000 and drop

sharply for quantity orders. New from Trivector is the addition of hardware floating point to the Triton 3 microcomputer system built around three Zilog Z80A micros. The company was also giving visitors a aneak preview of the TILL ledgar ayatem which runs on Triton 3 and will

al Compec were the new 318 paper-tape code converter, which is programmable and uses an 8080 so that any code can be handled, and the 316 extra wide keyboard printar terminal, which prints acrosa 183 colHere, there, and everywhere

Repko BV, the company which dis-tributes Modular Technology's products in Benelux, kept up the The minimodern fully lived up to its "ubiquitous" tag, turning up on most of the stands at the show, end Repko was in charge of the stand information system, end lest year used e PDP-11 to control the Repko, which received its first four interfeker pocket interface texters from Modulor Technology, fost the last minute it was found the three of them to eshibitors who DEC min! would not be evaileb naw the devices in use for installing so a personal computer was heatily acquired from the MRL hobby chop the modems for the information system — and promptly bought one Three hundred minimodemo in Delft.
Marie Repko (at the terminet in the state of th

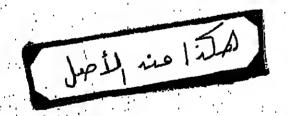
COMPUTER WEEKLY, May 18, 1978

were sold in Holland lost year, and

ebled the same message to be dis-tributed to 20 different display end

printer terminols eround the

NEW JOURNAL TURNING OUT TO BE A LOAD OF PULL.



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Each month Computer Products International publishes a special supplement covering a particular range of hardware. In May, we're spotlighting Microprocessors, in June spotlighting Microprocessors, in June Teleprocessing Monitors, July Plotters and in September 8-bit Minicomputers.

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A HIGH-SPEED addition has been made by National Semiconductor to its Pace fant lly of 16-bl1 mlcrapracessars that sports an litterrupt structure addressing mades und logical cupabilities normally associated with minicomputers.

Sald to be hetween 10 mit 30% faster than present generation 8-bli micros such as the 8080, the device is intended to meet upplications where a 18-hit word length is required in colluboraion with the low costs inherent in a one-chip, fixed instruction

All the 45 Instructions ure angle word, 16-bil format, and the device la capable of operating on both 18 and 8-bit data words.

Known as the INS8900, tha chip contains atatus and control circuitry, conditioned branch aanse circultry, interrupt logie generation circuitry. The two
external functions required are a
aimplo, singla-phase clock and
data buffaring, both of which
can be provided with off-theshelf parts. By adding a ROM

RAMs, all with an chip address lateltos, the company states that a rumplete system can he imp-lemented with no mure than five hankages.
A limit-in inicroprogram con-

trols the device during instruction fetch and execution, the interopringram being stored in a prugrammable logic array not ccessible to the user. For Internal storage there are

seven 16-bli registera, four of which are directly available to the user for dala storage and address formulotion. The 8900 uses a unified but architecture in which address

and dota tronsfers occur over the same 18-lines. Like several other devices, it olso has an onboard 1/O capability, where the flag output and jump command can be used together to form serial I/O port.

Suftware compatibility maintained with the rest of the Paca family of processors in the same software development alds, including the Paca Universal Development Syslem, can be

PoS stock control system

POINT of sala atock control is limit on the size of program the the prime application area for a new micro-based small business system developed by Ego Computers. With anothware that han bean developed in co-operation with the motor trade, the system comes with a growing ranga of applicationa packages for the small retail, service or manufacturing business.

The basic system is supplied with 32K of memory, together with twin floppy diacs, one video terminal and a 120 chps matrix printer. This can be expanded to

printer. This can be expanded to support up to 12.5M bytea of arm of Nippon Electric has be memory, 16 terminals, 16 troduced a 1K bit static CMOs printers and 16M bytes of floppy or hard disc.

The operating systom uses bits, the 22-pin device bas The maintrame software rechnology compatible inputs and output to provide a real time, multi-programmable virtual operating yolf supply, but the device was system that places no practical retain data down to 2 vults.

can bo run, Irraspective

memory size.

Pricing has been set by Eso at a competitive level, with a basic system complete with point of sale stock control antwark retailing for £6,500.

Statio CMOS RAN from Minnon

WITH the lower power require ments of battery operated systems in mind, NEC Electroid (Europe), the European tale

Fastest printer PLENTY of producta from US

Exhibiting for the first time et Compeo Europe, Trend Communications feetured the new 800 keyboard eend-receive terminel, which le slee

evellable in eutomatic and receive only versions, end rune of up to 30 chps. For the communications engineer, the company feetured the new Test Set 1-8-1, which includes synchronous end stort-stop sequences for testing

and UK companies were on display on the stands of Benelux distributors at Compec Europa, and some of these companies also showed algolficant products of their own davelopment Datua CDI of the Netharlands

had two notabla Items on dla-3000 line printer, and the General Robotics MVT/X3

Running at 3,000 lines a minute using impact technology, the IBM 1403 and 3811 compatible DOC-8000 is claimed to be the fastest impact printer in the world. in the world.

Why, it might be asked, should anyone want one of these machines when leaser printers like the IBM 3800 runso much feater? The answer lies in the price — about £60,000 for one, the figure failing renidity for the figure failing rapidly for quantities — and the need to back up laaar printers in. important applications, Tha aser printer can run four to six times as fast, but its price is

The MVT/X3 (offered in the UK by Gamma Associates) in cludes in a single desk top unit.
a 12 lines by 40 columns Bura 12 lines by 40 collumns Buritro) the loading of petrol into roughs plasms display a tanker trucks.

Honeywell kayboard, three minifloppies from Micropolis, a 132 column 80 chps Cantronics printer, and a DEC POP-11/02

The minifloppies offer over a Megabyte storage in total, and hava a better than 10 millisecond read-write time track to track, average of 20 milliseconds. Hawker Siddaley Oynamica

Engineering is determined to become a major force in microcomputer control applications, and featured its 8080-based Sequel user programmable plan] and process control ayatem. which was designed to meet tha intractable problem that process engineera are auspicious of computars and dialike handing over their applications to specialists for programming. Vector International of

Srussels sells the Sequel system In the Benelux market, and also ahowad its own 8085-based microcomputer cards, which it has assembled into a number of products including an electronic cash register. The company's biggest contract so far, worth

First, CA-DYNAM/D now, CA-DYNAM/T tape library management

Put simply, CA-DYNAM/T takes the curse off tepe library management under DOS, DOS/ VS opereting systems.

it mekes life simpler for the programmer; frees the operator from all of the inherent hazards of manual control of tape libraries.

CA-DYNAM/T makes sure... eutometically... that the right tepe is input - and that only valid scratch tapes are mounted for output.

Other benefits

Security isn't the only benefit. Throughput improves enormously due to elimination of reruns

drives - not to mention the operator's time.

system for DOS, DOS/VS

Plus... lots of useful features to streemilne tape processing operations, among them:

 Automatic RERUN facility – Fully eutomatic multi-file and multi-volume handling Automatic release of tape work

Use of alternate data sets for

Total tape file security through matching password preventing accidental erasure and unauthorised access to confidential data -

and far more efficient use of tape | DOS, DOS/VS release independent - no modifications to JCL or programs required -CA-DYNAM/T logs exceptional

> occurences for audit trail provides comprehensive

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Scope in UK for a West German range of systems

FACILITIES for multiproces-sing, object code compatibility and upgrading were the mein reasons behind Scope Data Sys-tems' decision to market the World Command of CTM 2000. West German-made CTM 70 range of small business systems

Scope had for two years been looking for a system with these attributes, says meneging illrector Geoff Poskitt.

The four-strong range is based around a 400 nonosecond processor that can be upgraded in the field from 16 to 128K bytos of Longuoges evellable include

Basic and Macro Assembler. The basic unit, the Modal 600,

The Model 700 includes up to

Multiprocessing is the key attraction of the Model 900,

four floppy disc drives with a cepacity of up to 636K bytes per drive. The Model 700 cen be used for word processing epplications, and hes an average price of £13,000. The Model 800 costs about

which can have up to 16 video terminals, each with its own processor. Prices range from Automation will demand human flying squads

AUTOMATION in industry will not necessarily lead to mass unemployment, but it will require a fundamental change in human ettitudes to job training and retraining to allow the formation of "human flying squade" to cepe with

This view was put ferward by Robert Bass

of Gritish Sugar in a lecture at the inetitution of Electrical Engineers in London. He traced the history of precase central in industry, peinting out the distinction between centinuous precesses, which had been easy to control and manage, and batch precesses which had invariably caused industry some headaches. Initially, the monitering of such

per system, the engineers developing them had en even greeter responsibility te industry to ensure that they worked Sass pointed out that the systems could now, theoreticelly, run themselves; but inevitably they would break down, so there weuld

Such equipment could meniter and contrel many batch processes, but even though ex-tremely relieble, it did brank dewn, and the

ormeue. He indicated that industry is beginning to He indicated that industry is beginning to think in terms of the assessment of all employees flexibility to werk changes at a possible critorion for employment, and that that flexibility but to be part of names general Now, with the advent of hierarchical eya-

that trexibility has the beginner of a more general introsphere tewards expecting cheape.

These employees would not be employed to run the equipment white things were going well, he indicated, but would be there to keep the processes running when the coairs and equipment failed.

South Africa seeks to end reliance on foreign 'technological blackmail'

result was aften cataatrophic.

tama based on the use of one micrecemputer

A LEADING South African computer expert believes that the country can minimise the er of "foreign technological bleckmell" through the repid development of local herdware

to lesen the country's dependence on multinetional sup-

Morrie Cowley, chairman of

the Anglo American Corpo- should be the crention of o retion's in-house computer domestic computer leasing operation, and chief executive of cial burden of funding renthis its commercial computer company, Computer Sciences, seye from local menufacturers. three logical steps must be taken Cowley believes that the

second step should be the development of a "mldl-computer" manufacturing industry financed through South Africa's Industrial Development Corporation to reduce dependence on the multinutional supollers of mainframe units.

South Africa, he snys, should follow the example set by both Israel and Japan, which broke into computer manufacturing

Clusters of smuller computers, he adds, enn be vlable substitutes for large mainfrome

The third step advocated by Cowley is the establishment of a operation geared to scryicing existing multiframe units if and when the multifrathmals decide lo abort their Snuth African operations as a result of political

Although he does not helieve that the US will impose a general emburgo on computer sales to South Africa, he says that the country depends too henvily no computers to have its future crippled by the whima of

Nato to call for bids

• From front page

perlence from military work in

By the time the calls for bids are made, several nf the conpeting firms will probably have aligned themselves with partners in consortia. Leasco oftware says that it is currently in the process of looking at sullable consortle to get involved

it is understood that it could nvolve an investment of about £250,000 merely to put together

The competition for the Nato contracts will be extremely flerce because even though most of the work will be in Europe, arge US contractors not normally active on this side of the Atlantic will be entitled to bid by way of the massive US involve Ment in Nato.

A Nato spokesman in Brussels

revealed that the command and. control network was discussed at the last conference of member country armament directors in Brussels about two weeks ago. But whichever firms or con-

aortis win the contracts, work is not expected to start until next

NEWS IN BRIEF

Micro impact

on universities THE Computer Board o' studying the impact of the microprocessor on university; computing facilities.

The working party, under it Jim Alty of Liverpool University, is expected to provide on interior report soon and is likely to cos clude that university computer departments should play a contrel role in ensuring that en ploitoting of the wide potential of micro applications is effectively co-ordinated.

Waiting list

THE barough council of Sant well, West Midlands, is considering computerising its couell house wniting list, with ter minuls in ull nrea housing offices, supplying informations officials and families. But some councillurs doubt that the £20,000 expenditure would led to any reduction in waiting time

Takeovers blocked

SHAREHOLDERS In Control Data have narrnwly approve lwo changes in the articles du association which will make a more difficult for another com pany to surcerd in a takeow hid. They also rejected a motion spinsored by church organise lions whileh would have prevented CDC from trading b South Africa, maly 4 per cent of the shares being voted in fovois?

Cost saving

A RE-USABLE ribban carrier has hern developed fur Quat and Dhible duisy wheel printers allowing the tise of cheaper replacement rlibons that cone without n cassette. This save the cost of the throw-ewey cussette, which is as much es the ribbun itself. The user loads the new ribbun into the corrier, the fits the carrier to the printer &

DG launch

TWO industry compatible misting in the tape subsystems have been introduced by Oata General fet. use with Nova and Eclips minicomputers. Celled ik Moilel 6026 and Model 60% both run al 75 lps. Recording densities are 1600 and 800, b) of the 6026 and 800 bpi on the 807.

Tornado prediction

SCIENTISTS at the US Nation Ocuanic and Atmospheric minletrutinn's Severe Sinti Laboratory in Oklahoma han ilevised o aystem using Dopper radar and two computers that can predict the formation tornodurs before they form. The Doppler radar senses the 1/2 and movements inside thunder clouds of mesocyclones, the precursors of tornadoes. 80 thesa are displayed on color

Court system

A COMPUTER system designed specifically to meet the demand of magistrates' courts has been introduced by ICL. Called the Magistrates' Courts System; Can handle the eutomatic por duction of fines and other all ments received, and of compre-sation paid out.

equate high imemployment companies to set up busiwith a surplus of jobs over ness, recruit and train staff fact that in the UK there are t.5 million unemployed, yet within the UK. the computer industry has

By Ray Hewlett

nditure yet the computer is 12% helow minimum requirement to operate and maintain u minimum ser-

This probably results the past one and a half defrom school entriculums still blased towerds the arts and colleges of further courses such that only one per cent of them include enurses which could be was an increase of 16,000, ance in setting up offices for useful to a prospective pro- and it is believed that this foreign work, many of upward trend of people employed in services such

ment and troining.

add to them a community tinuing to grow. led to years of an accepted There are two organism Elre, high level of unemploy- tions responsible for proond you have some of the ment Authority and Guel-IDA -this anthority was

much and, in some cases, Department of industry and muchly spoken language, workers in new industries.

Rey Hewlett, meneging director of Derritron (Eire) Toorente (Cybergraphics), looks et two organisatione in Ireland which encourage new industrice to settle in that country.

antonomous state body. In This article will discuss the two organisations spend on industry. The The NHS cuts back in ex- within Eire whose job is to IDA's main task is to enencourage new industries to courage home industrialists instellation within this, the settle in that country, and industrielists from country's largest employer, and examine the system abroad to set up manufacthey operate for recruit- turing operations in Eire.

The IDA programme also Eire has changed little over such as engineering concades. In 1963 II numbered and computer software 1,122,000, 1073 - 1,118,000 houses provided they end 1977 - 1,200,000. In operate internationally or arranging 1973 some 59,000 were have experience not dustries which at that time are considered for assist-

> as computer bureaux and isters all the financial inallied industries is con- centives available to industry in the greater part of

Gnelturrn Elreunn ment, at present 10% of the moting industrial develop-employable community, ment: industrial Develop-tion is responsible for the tion is responsible for the extremely efficient training economic development of schemes, and the IDA proare those parts of Fire to 100% of the cust of ngreed Yet there is probably as formed in 1949 as part of the where, Irish is the enm- training programmes for

applicants. It is a known in this part of the world Commerce, but is now an The organisation operates independently of, and in co-

Resulting from the nation

those available generally.

These incentives include:

grants of up to 60% for

illding and new equip-

ment; b) up to 100% training

grants with assistance pro

virled in recruitment selec-

tion and training; e) low

rent factories built to pro-

moters' specificotions: and

il) exemption from tax on

operation with, the IDA. al commitment to stabilise the population in these areas and preserve the Irish language, the incentives available to industrialists are, in the mein, higher then

The total workforce in Includes service industries sultants, process engineers employed in the service in- available in Ireland. These

> Bosides these financial alils, Gneltarra can par-

take in the share capital of a company from a minimum

Cantrell & Cochrane **DUBLIN**

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(a) Systems Analyst — To £6.100

He/she should be able to demonstrate the design and successful implementation of a mejor system. It would be dasirable that ha/she had knowledge of distribution.

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Dur client, a leading manufacturer of digital computer integrated measurement and control systems used in the Puper, Pulping Energy Managament, Butber, Plastics and Matet Industries, wishes to recruit expanienced angineers for their expanding software team on the South Coast of Ireland. The company has built two plants during the past five years to ceter for their repidity growing European merket.

Software Engineers/Programmers

£5000-£7000

South Coast of Ireland

The job will involve working on the development and monufacturing of process control eyetoms. Dna of thase systems, the DECADE System is intended mainly to control Plastic Extrudes. It consists of es many on line systems as there are extruders to be controlled, all inked to a central data terminal. Each on line system, plue the intolligont debi torminal Incorporate a PDPII computer Two to four years' experience of Assemblor level programming is necessary lot thase positions. A B.Sc. would also be helpful as would exparience of any of the following. Mini Computer or Real Time programming. Process Control applications or Oigital Computing.

These positions era in a new plant end therefore offer genuine scope to the successful candidates to build end enlerge their cereers. On sita commissioning is involved so there will be opportunities to traval in Europa. A competitivo ealery will be negotiated which mportance of these positions within the company. Relocation expenses will be paid where

Central Computing Consultants

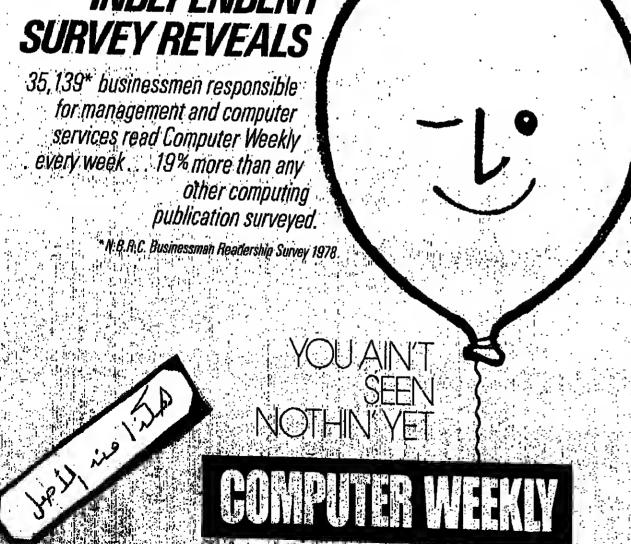
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contribute to the design, evaluation and implementation of Planned Computer Projects, in addition, this porson wilf lan primarily responsible for the day-to-tlay operation of the epplication software. A deteiled knowladge of Fortmin is

essentiel, end whilst a knowledgo of Assembler is desireble, candidates ideelly should have axparience of PDP systems using RSX 11M operating system. However, epplicants with good commercial experienco of reol time On-line systems will be considered.

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A. SENIOR SYSTEMS ANALYSTS

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B. SYSTEMS ANALYSTS

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C. SENIOR PROGRAMMER

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Administra distri-

MEASUREX (IRELAND) LIMITED

A leading manufacturar of digital computer integrated measurement and control systems, continues to expand its operations. Measurex manufactures all of its systems for the European market in Iraland. In order to further serve the needs of this market and broaden the base of its Irish operations, en Engineering Group has been established in Cork, Ireland.

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DUBLIN

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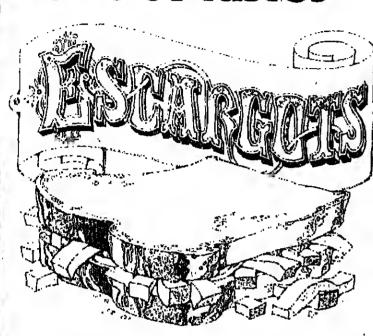
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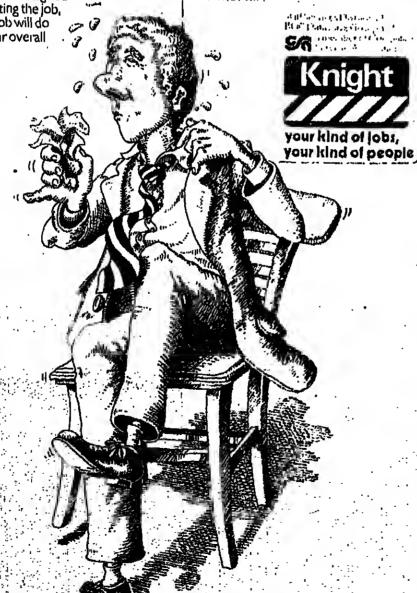
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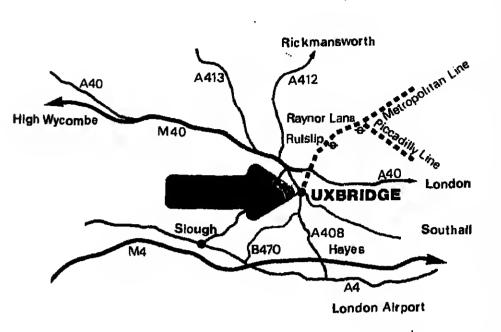
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- ★ English speaking environment
 ★ Settling in allowance for matried or single

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Our client a major nort successful concour wishes to strongthen its European programming tenut Retaining ISM 370 hardware under OOS/VS, the co. eeeks embitious parson with PL/I, CICS

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- persone * Selery 42,000 guildore (£10,000) + com-
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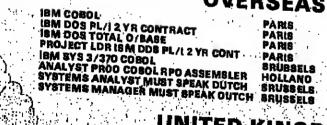
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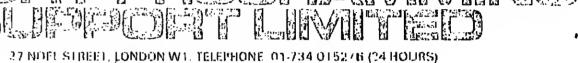
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SYSTEMS ANALYSTS

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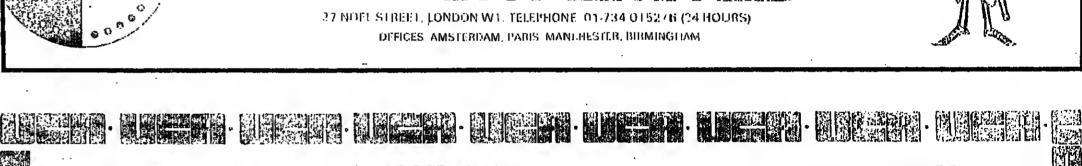
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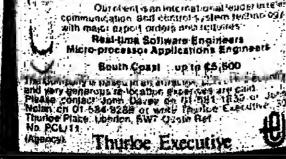
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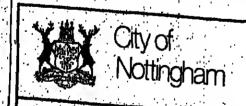
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Jachnicelly we expect a minimum of a years in systems analyse. programming background. You will have implyinguised as least one prospectively, within time and budget constraints.

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Computers play a vital part in the continued growth of this client, which is a highly successful retailing organisation. The organisation attributes part of its success to its highly developed computer systems and further investment in hardware and software has led to the need for additional SYSTEMS ANALYSTS and PROGRAMMERS. Some key points about the environment are:

Technical

- **★** Mainframes & Minis
- **★** Extensive network
- ★ Dalabase
- **★** Distributed processing

Systems

- ★ Dn-line order processing
- **★** Point of sale
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The Systems Development department is organised into a number sections, on a project team basis, each concerned with one of the organisation's main activities. Some of the current vacancies are outlined below.

Project **Programmers**

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to £5,500

Point-of-Sale Applications

A Menegement decision has been taken for e Point-of-Sale system to be developed and subsequently to be implemented et the company's extensive retail outlets. This is a foreaching epplication end is designed to capture ell movemente of goods within the company's stores. The epplication has immense potential for growth bocause it is eventually proposed to link, by e communications network, all stores to the central data centre. A pilot schema is currently running using IBM equipment end the scopa of the project offers very exciting prospects to the programmers joining the teem. The essential requirement is a good knowledge of IBM Assombler in aither an OS or DOS onvironment. Over three years' experience is needed for senior programmer positions, but other good quality candidates with less experience could be considered for less senior positions. Raf. 238/1

Senior Systems **Analyst**

to £5,500

Mejor systems for completion APRIL 1979

A pensions administration system is being developed urgantly to be implemented by April 1979 to meet the requirements of the Department of Heelth and Social Security. The system is being built around a paneions peckege supplied by a specialist consultent but a lot of basic investigative work needs to bo Ref. 238/4

Pensions administration system

dona to asteblish how the package will link with the company's with wide ramifications throughout the organisation. A senior system analyst is required urgantly to cerry out this project. Candidates should have 4 to 5 years' systems experience, and whilst pansions axpariance would be edvantegeous, experienca in the general commarcial eras would be quita

BACKGROUND NOTES on the company and job specifications for the vacancias are available to suitabla candidatas.

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Project Leaders

Distribution Systems

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Retail and distribution experience needed Extensive systems developments pienned Scope for creative thinking

Extensive developments are planned for the company's distribution systems, whore computer systems have not yet been widely developed. It is intended to look for date processing solutions to problems essociated with the current extensive manual systems requiring high steff levels in the distribution centres. The new systems heve, however, still to be delined based on business decisions, thereby providing much scopo loi original enelysis of the situation end embsequently for creetive thinking to arrive et eclutions. Up to two Project Leadors ere required to lead Jeams in this erea. Candidetes wil need 5 years' plus DP experience of which 2 or 3 years must have been on the relaif / distribution systems. Condidates must be capelilo of assuming responsibility for small to medium sized project teams of analysts and programmers.

On-line transaction processing to £5,000 Exciting projects for systems enelysts with 2 to

Systems Analysts.

3 years' experience These vecencies ere in in the section responsible for dove-

loping systems to cope with the vory high volume of orders which have to be processed daily - up to 1/2 million transactions. The systems currently running eccept input from an extensive netional network of 600 VDUs, and these systems are to be extended to cover other aspects of the company's ectivities. Amongst other systems to be developed, a control stock database is to be set up to improve inventory control Systems doveloped for this on-line onvironment must setisfy stringent teste of technical afficiency as well as serving a the noads of the usors. Successful candidates are likely to be graduates around 25 with 2 or 3 years' systems experience. The type of application and hordware is not important

Senior Systems **Analysts**

Merchandising Systems

to £5,500

Extensive development programme to 1980 and

The organisation has far-reaching plane to entirally redevelop its existing systems in this field to take occount of new requirements end to take advantage of the banafils evelleble from the new hardware and software. A common data bese is to be set up to integreta stock end linencial data. Soma aspects of the new systems are: lorecesting based on orders pisced on-lina date entry of goods received; improvement of eupplies payment systams; improved stock control. Three senior systems analysts ere now required to Join project teams working in these areas. Four to five years DP experience is needed with at least three years analysis end design experience. Candidetes should be meture and sell con e stabla background end a solid record of achievement. They should have the potentief for early promotion to Project

Senior Programmers Cobol development projects

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3 years + COBOL on ANY hardware needed

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Technical

- * Mainframes & Minis **★** Extensive network
- ★ Database
- * Distributed processing

Systems

- ★ On-line order processing
- * Point of sale
- **★** Distribution
- * Finance and accounting

- **★** Continued growth means good prospects
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Benefits

- * Bonus scheme
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Location

- ★ Close to coast and country
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The Systems Development department is organised into a number sections, on a project team basis, each concerned with one of the organisation's main activities. Some of the current vacancies are outlined below.

Project **Programmers**

IDM Assembler experience

to £5,500

Point-of-Sale Applications

A Management decision has been taken for a Point-ol-Sale systom to be developed and subsequently to be implemented at the company's extensive retail outlets. This is a farreaching application and is designed to capture all movements of goods within the company's stores. The application has mmense potential for growth because it is eventually proposed to link, by a communications natwork, all stores to the central date centre. A pilot scheme is currently running using IBM aquipment and the scope of the project offers very oxciting prospects to the programmers joining the learn. The essential requirement is a good knowledge of IBM Assembles in either an OS or DOS environment. Over three years' exporience is needed for sonior programmer positions, but other good quality condidates with less experience could be considered for less senior positions. Ref. 238/1

Senior Systems **Analyst**

Pensions administration system

to £5,500

Major systems for completion APRIL 1979

A pensions edministration system is being developed urgantly to be implemented by April 1979 to meet the requirements of the Department of Health and Social Security. The system is being built around e pansions package supplied by a specielist consultent but e lot of basic investigative work needs to be done to establish how the package will link with the company's other personnal systems. It is a major and edvanced system with wide ramifications throughout the organisation. A senior system analyst is required urgantly to carry out this project. Candidates should have 4 to 5 years' systems experience, and whilst pensions experience would be adventageous, axperience in the general commercial area would be quite Ref. 238/4

vacancies are available to suitable candidates

Project Leaders Distribution Systems

to £6,250

Retall and distribution experience needed **Extensive systems developments planned** Scope for creative thinking

Extensive rievelopments are planned for the company's distribution systems, where computer systems have not yet been widely developed. It is intended to look for data processing solutions to problems easocieted with the current extensive menual systems requiring high staff levols in the distribution contres. The now systems have, however, still to be dofined besed on business decisions, thereby providing much scope for original enelysis of the situation and subsequently for creative Ihinking to errive at solutions. Up to two Project Leadors ere required to lead teams in this orea. Candidates will nued 5 years' plus DP experience of which 2 or 3 years must hove been on the rotail / distribution systems. Candidates mus be capable of ossuming rosponeihilly for small to meilium sized project toems of analysts and programmals.

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Exciting projects for systems analysts with 2 to 3 years' experience

These vacancies are in in the section responsible for deve loping systems to cope with the vary high volume of orders which have to be processed daily — up to ½ million trensections. The systems currently running eccapt input from an extensive national network of 600 VDUs, and these systems are to be extended to cover other especis of the compeny's activities. Amongst other systems to be developed, a control etock database is to be set up to improve invuntory control Systems developed for this on-line environment must satisfy stringont lesie of lechnical afficiency as well as sorving the needs of the users. Successful condidates ore likely to be groduates eround 25 with 2 or 3 yoors' systems experience. The type of application and fleidware is not important

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Merchandising Systems

to £5,500

Extensive development programme to 1980 and

The organisation has lar-reaching plans to entirely redevelop its existing systems in this lield to take account of new requirements and to take edventego of the benefits evailable from the new hardwere end software. A common data base is to be set up to integrate stock and financial data. Some espects of the new systems are: forecasting based on orders placed; on-line date entry of goods received; improvement of supplier payment systems; improved stock control. Three senior systems analysis are now required to join project teams working in these areas. Four to live yeers' DP experience is needed with at least three yeers' enelysis and design axparlance. Candidates should be mature and salf confident with a stable background and e solld record of echlevament. They should have the potential for early promotion to Project

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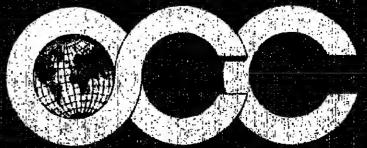
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to me, Neville John on 01-242 9356 (day) or Farnborough

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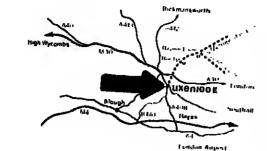
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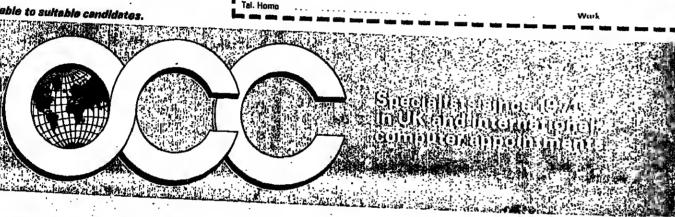
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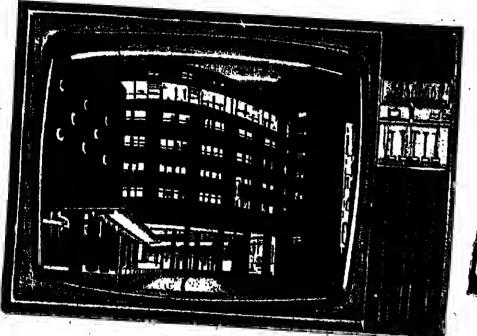
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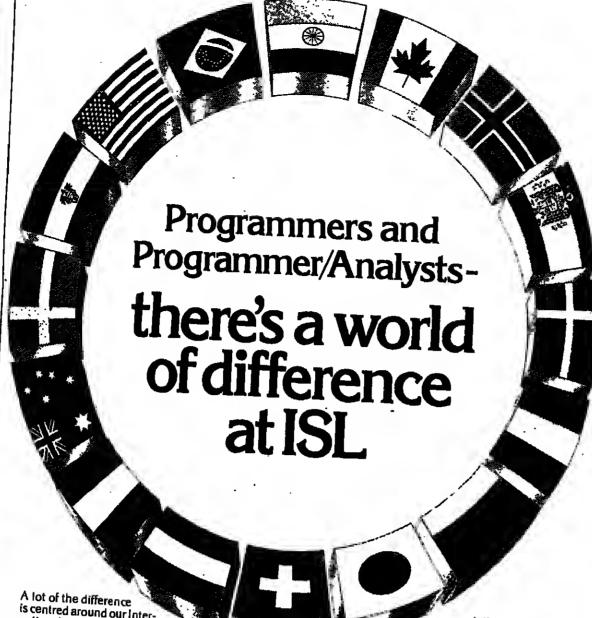
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